

3D World

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THE INTERNATIONAL MAGAZINE FOR 3D ARTISTS

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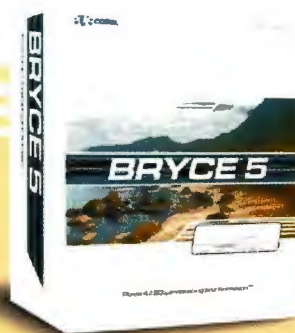


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PERSPECTIVE

3D world

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editor's PERSPECTIVE

Just as we were going to press and too late to be included in News, we received a press release from Alias|Wavefront with the somewhat astounding news that it's giving away a version of *Maya* for free.

The Personal Learning Edition is essentially *Maya Complete* for personal non-commercial use only, which is why it renders with a watermark, can't share files with the 'real' version, and won't work with plug-ins.

Nevertheless, this is a damn shrewd move on the part of A|W – not to mention a welcome one. The company is ensuring that as many people as possible get experience of its software – perfectly legitimately, instead of through pirated copies – and should therefore bulk up its future user base substantially, when those students and dabblers go on to become professionals in the industry.

It should certainly be interesting to see what Discreet, Softimage, NewTek, Maxon and the rest do now, if anything...



Ed Ricketts
Editor

The critical list

MARK BRIERLEY is a freelance *Softimage* animator based in Bristol in England, with numerous CG-related projects under his belt.

GEORGE CAIRNS teaches students the joys of *Maya* by day; by night his alter-ego produces sci-fi artwork for CCGs.

SIMON DANAHER is a Mac fiend who corners the market in 3D-related reviews and tutorials.

PETE DRAPER, a *3ds max* expert, is Orchard Creative

Design Group's senior 3D artist and a regular *3D World* contributor.

DAVE OSBORNE is a freelance animation director who entered the industry in 1987 and has recently finished kids' CGI series *The Cubeez*.

MARK RAMSHAW is a long-standing contributor to many games and design magazines and is a *3D World* mainstay with plenty of features under his belt.

BENJAMIN SMITH is 3D director at Stormfront Digital

Pictures, an award-winning studio which specialises in producing animation and visual effects for TV and visitor attractions.

ANDY STOUT has been a freelance journalist in the CG, film effects and post-production industry for nearly a decade.

ALEX MORRIS is an architectural illustrator with Hayes Davidson, a collection of artists, architects, graphic and media designers.


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01

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01

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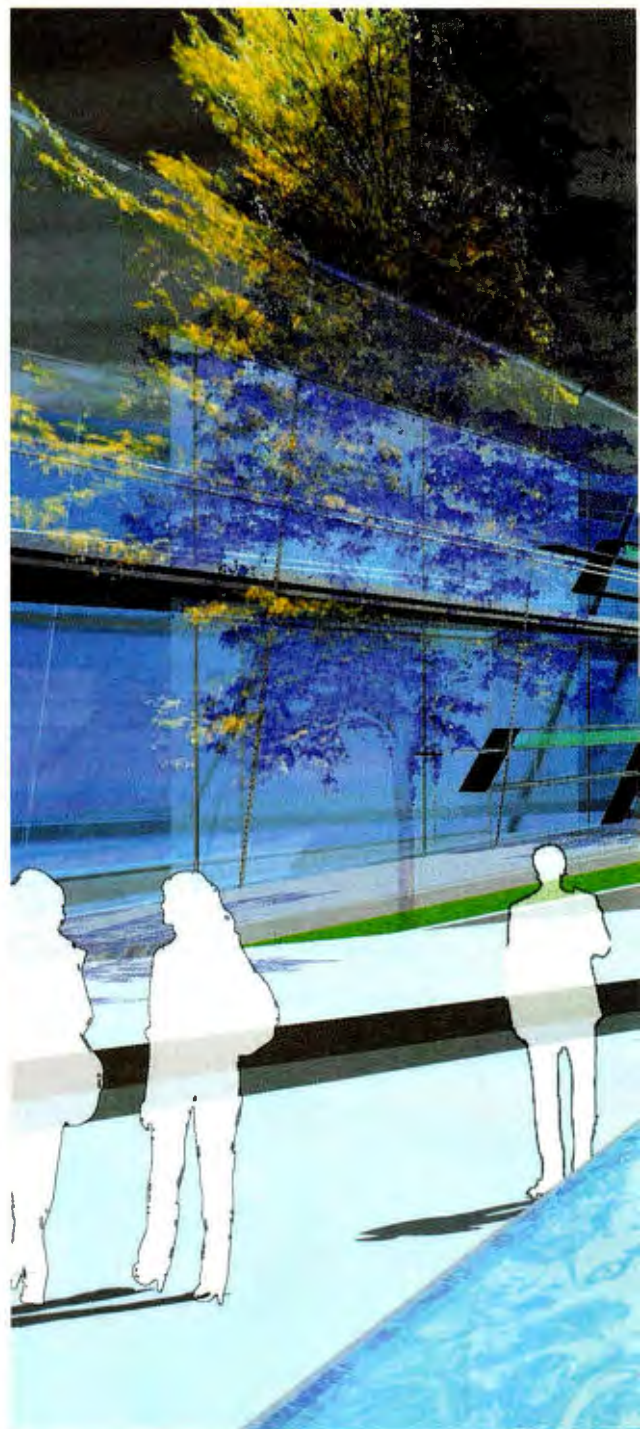


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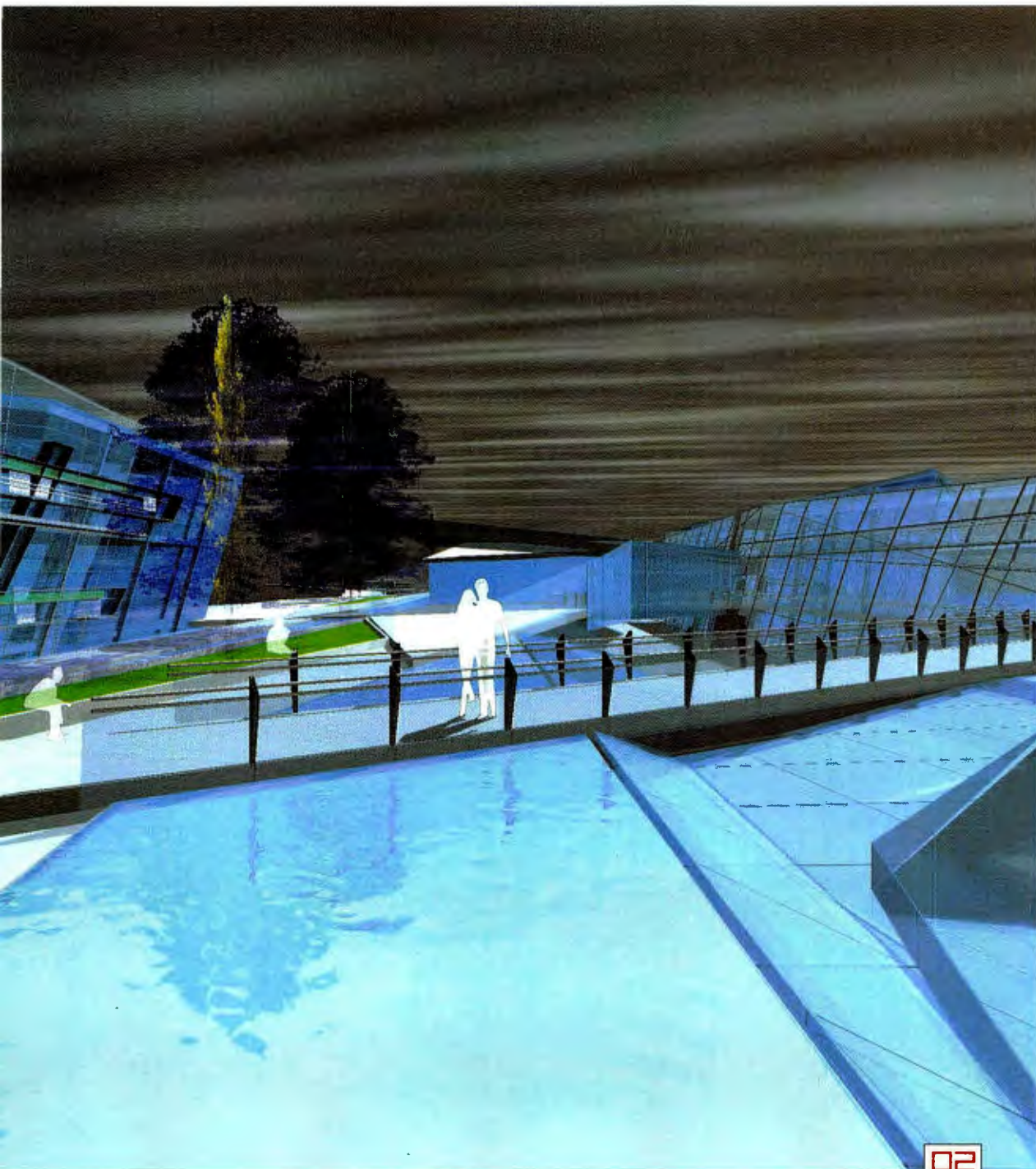


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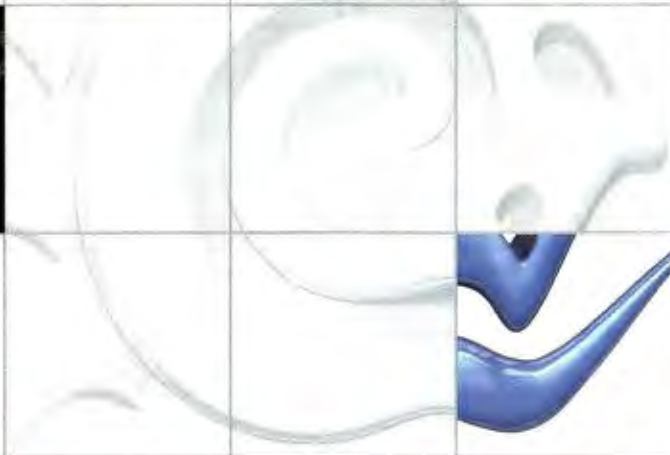
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IN MUSIC VIDEO: Gorillaz 19/2000, Starlight / Superman Lovers, Robbie Williams / Let Love be Your Energy...

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NewTek



EXHIBITIONIST

A fascination with real-life forms and sci-fi interior environments have led *max* artist James Abell to the brink of dealing with an infestation of robot ants...

Most 3D artists can go to work each morning safe in the knowledge that a commission from nightmarish giant mechanical ants is pretty unlikely.

After all, when faced with an interior design conundrum, most oversized futuristic insects will tend to favour a mulched-up leaves and wood pulp solution, giving no thought whatsoever to the benefits of 3D visualisation. But for James Abell, talented architectural 3D designer, sci-fi enthusiast and creator of *Ant Colony 5*, the short animation on this month's cover CD, this is a dream assignment.

Ant Colony 5, which James plans to eventually use as a prologue for a graphic novel with an interactive CD-ROM, was recently shortlisted for the *Unleash the Talent Inside Award* organised by Tango and Channel 4. "I was really pleased to get to this stage because it concentrates more on environments than character animation," says James. "I had a challenge to link the scenes as a whole because they were different and diverse within themselves, and I was particularly pleased with integrating each scene by a scrolling overlay. The film also includes a satellite and Earth scene. I know this is meant to be the 'do not do' in 3D, but it was a vital part of the story."

As well as his ability to send clichés scurrying, James draws on a range of influences as diverse as Philip K. Dick and James Dyson. So it's no real surprise to find that since graduating with a degree in Interior Design from Edinburgh College of Art and setting up his own company, he's used *max* to build up an unusually wide-ranging portfolio.

Stemming from a fascination with designing forms that would function in the real world, tempered with a love of films, James's degree work was often redolent of the sci-fi interiors of films like *Gattaca* or *2001*. So far, his commercial work has benefited from this imaginative approach to environment design.

There's no doubting his commitment either. "I was given work a week after graduation by a company to visualise a conference stand. So I took a jump and bought *3d studio max* instead of a car and did a business course," he recalls.

When he started out, lack of funds to splash out on the plug-ins he required forced James into

time-consuming workarounds, but he's now looking to expand his *3ds max 4.2*-based set-up with both *mental ray* and *character studio*, and seems quite content with the software. "I always find rendering can be made a lot faster with thoughtful uses of mask composition put through video post on *max*, and I feel that *3ds max* is versatile and very capable," he explains. "I'd like to look more into *Maya* and *LightWave* to weigh up the benefits and drawbacks. I was also impressed with the integrated 3D Web that *max 4* has, especially the ease of use of *Turbo Squid*, which I've uploaded models onto."

For the foreseeable future, James is happy with his own company, although he hopes that, in future, larger operations will approach him to help design and create their environments too. His current project, a New York street scene, pays

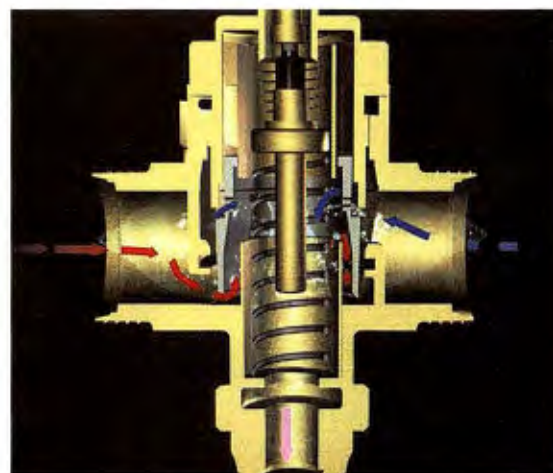
particular attention to real-life lighting, textures and widescreen composition in order to capture the bustle of life at street level. "I would very much like to team up with someone who specialises in character animation, to create something great in the future. I'm always open to offers."



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You'll find *Ant Colony 5* included on this issue's cover CD.



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SCREEN
TIME

FrameStore and CFC merge

When two of the CG industry's biggest players join forces to form an effects powerhouse, is it a sleek new business adaptation or a case of safety in numbers?

Following four and a half years of working together on visual effects for films as part of the FrameStore Group, and after the recent success of joint pitches for the effects work on highly coveted, high profile future projects such as *Harry Potter 2* and the new advertising campaign for Levi's, FrameStore and CFC have announced the formation of a single new company, FrameStore CFC. The 'next-generation' venture will bring together 240 employees under a management team consisting of joint chief executives Sharon Reed and William Sargent, and no redundancies are planned as part of the merger. FrameStore CFC is to concentrate on three core business areas, namely film projects, headed up by Rachael Penfold, television projects headed up by Fiona Walkinshaw and commercials and facilities, led by Jon Collins.



FrameStore's roll of honour includes *Lost World* (right), *Walking with Beasts* (top right) and Chrysler ads (far right), but CFC don't come to the party empty-handed.

The companies have been part of the London VFX scene since time began in the mid-eighties, but until recently were chiefly synonymous with different areas of the industry. CFC, renowned primarily for its involvement with film effects, has worked on everything from *Harry Potter* to *Chicken Run* and *Enemy at the Gates*, as well as the cinematic Dream Club ads for Guinness. FrameStore, meanwhile, has made a name for itself by visualising the world of the highly regarded BBC TV series *Walking With Dinosaurs*, creating its follow-up *Walking With Beasts* and supplementing this longer-form work with a steady diet of commercials work for a diverse range of clients including Chrysler, Coca Cola and the BBC. The formation of the new company follows a period of increasing convergence between the two outfits and an increasing amount of collaboration on projects. "Our current structure does nothing to emphasise our many similarities and

FACTFILE

FRAMESTORE

FORMED 1986

BASED London

WEB www.framestore.co.uk

CREDITS *Lost in Space*; *Gulliver's Travels*; *Walking With Dinosaurs*; *Walking With Beasts*; *The Lost World*; TV ads for *Breathé*; *British Gas*; *Goldfish*; *Nintendo*; *Halifax*; *Fiat*; *Coca Cola*; *BBC*; *Barclaycard*; *Daily Mirror*; *Fosters*

CFC

FORMED 1984

BASED London

WEB www.cfc.co.uk

CREDITS *Blade 2*; *Resident Evil*; *Harry Potter*; *Tortoise vs. Hare*; *Pluto Nash*; *The 51st State*; *The Parole Officer*; *Tomb Raider*; *The Mummy Returns*; *Cast Away*; *Sexy Beast*; *Enemy at the Gates*; *What Lies Beneath*; *Chicken Run*; *Mission: Impossible 2*; *Guinness Dream Club* ad series

"THE FORMATION OF FRAMESTORE CFC SIMPLY FORMALISES A NATURAL DEVELOPMENT"

strengths. Over the past four years FrameStore and CFC have been growing closer and working on joint projects," says William Sargent. "Many of the most exciting pieces of new business we have won recently – including *Harry Potter 2* and the new campaign for Levi's – have been the result of joint pitches. The formation of FrameStore CFC simply formalises this natural development and, most importantly, plays to our strengths."

Fellow chief executive, Sharon Reed, explains that the merger was at least in part a reaction to changes in the industry's requirements, but isn't necessarily a blueprint for other CG companies to follow. "It's difficult to present us as a model, but I do think there's convergence... We're now beginning to grade whole movies and it's now feasible to create CG creatures for TV budgets, for example. One of the things we thought was an issue for us, looking forward, was that cinema is becoming



what's new

increasingly digitised in the areas of theatrical projection and digitising whole movies, and people will use digital techniques more readily, whatever resolution we all end up projecting on," Sharon explains. "At the same time we're doing commercials for higher resolution, we're making everything widescreen for TV and the whole thing is becoming one, which was I suppose the obvious, inevitable direction it was going. If there's a trend that this is part of, then that's probably it, but for us it's more an internal story."

So could FrameStore CFC be seen as an indicator of leaner times ahead for the CG industry as a whole? Not so, according to Sharon. "One of the nice things about the merger happening now is that both companies are busier than they've ever been. At what used to be CFC we won quite a significant amount of work on *Harry Potter 2*, we've just delivered *Resident Evil* and we're delivering *Blade 2*

for which we've done the majority of the effects work. So it's a good time to do this," she says. "At the same time, FrameStore's working on *Dinotopia* for delivery in April, we've just finished *Beasts and Lost World*, and when we won the Levi's commercial we decided that the right way to approach it was to combine people from both companies, so in a way it's a natural development."

While the companies are remaining where they are for the time being, Sharon also sees the potential for more internal mobility on the horizon for staff, as well as freedom from maintaining two overlapping corporate identities. "It's good internally too, because the boundaries were pretty artificial really. It frees us from limitations and allows us to put teams together more easily," she concludes. It remains to be seen how many of London's effects houses will follow suit.

CONTACT: www.framestore-cfc.com

FILMBOX 3.2

Kaydara has upgraded its flagship character animation system. The new version introduces improvements to the animation toolset, including facial mapping, keyframing and phoneme features, a new global timeline for instant editing and improved control for animating individual bodyparts. *FILMBOX 3.2* is available for \$5,000 for Windows 2000 / XP, Apple OS X, IRIX and Linux.
www.kaydara.com

ANIMO 4 OS X

Cambridge Animation Systems has ported its widely used *Animo 2D* cartoon animation software to the Mac OS X. Featuring the same functionality as its Windows counterpart, as well as the ability to render *Animo* scenes to the *Flash*.swf file format for optimised Web output. *Animo 4* is available for \$5,530, so see the site below for more on its capabilities and on limited special offers.
www.cambridgeanimation.com

FINAL CUT PRO 3

Apple's latest release of its video editing software *Final Cut Pro* sees a move to OS X, G4-based real-time effects, a new colour-correction tool and the efficient offline RT codec as the major additions. The software is priced at \$999, with existing users able to upgrade for \$299. See the site for more details.
www.apple.com/finalcutpro

DIGITAL FUSION 3.1 DEMO

Shoot over to the site below to download an evaluation demo of *Digital Fusion 3.1*, the latest incarnation of Eyeon Software's 3D compositing tool. The download comes complete with tutorials and includes the latest enhancements to the product, including enhanced paint and colour-correction control, and the new particle system toolset.
www.eyeonline.com

UNIVERSE 4.0 SHIPS

Universe 4.0, the latest upgrade of the animation system from Electric Image, is now available for \$995, with an upgrade price of \$349 for owners of version 3.0. The new release offers new improved character animation capabilities, global illumination and an improved renderer, allowing you, in the words of the website, to work hard, render fast and retire young!

CONTACT: www.electricimage.com

PACK N MAX

How much 3D power will \$999 buy you these days? Lots is the answer, thanks to the new DCC power pack, which consists of an ELSA Gloria DCC graphics card, a four-month licence for *3ds max 4*, character studio 3 and reactor, and a bundle of useful software including Right Hemisphere's *Deep Paint*, 3D Texture Weapons and 3D Exploration tools. The power pack includes a \$1,000 discount voucher for those who buy a full licence for *max 4* by April 2002.
CONTACT: www.dlscreet.com



E.T.'S ENHANCED TECHNOLOGY

Two decades have passed since Steven Spielberg first created a creature that looked like a dirty protest with eyes, and then used it to make everyone cry. So to celebrate E.T.'s birthday in style, the director's all-time classic – almost certainly the best children's film of all time – has been remastered and digitally enhanced, with CG enabling the filmmakers to add, alter and refine scenes. In the new version, for example, E.T. takes a bath, which at the time was a tall order for the animatronics. Similarly, CG has improved the lip-synch for the crucial 'E.T. phone home' scene, and other minor alterations, such as the substitution of guns for walkie-talkies, have also taken place. E.T. is due for release in the UK on March 29, 2002; see the official site for further info.

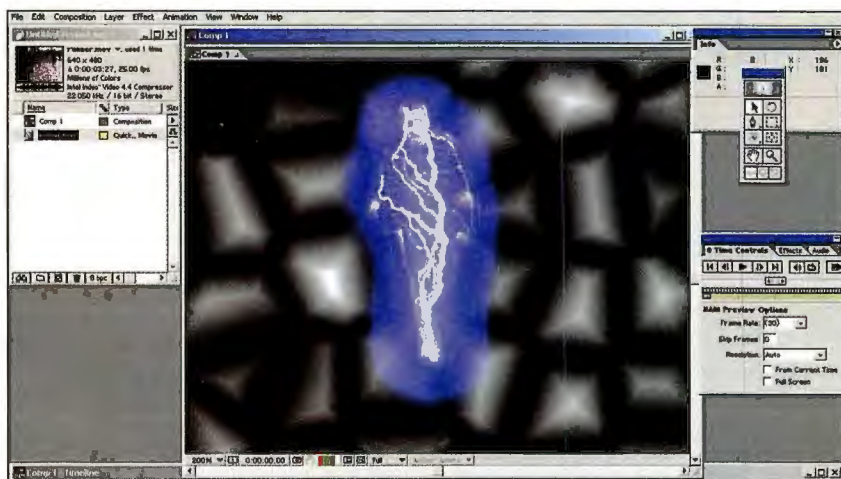
CONTACT: www.et20.com



BELOW New features of *After Effects 5.5* include an advanced 3D renderer and enhanced integration with *Maya* and *max*.

After Effects reaches 5.5

Adobe's DV effects software enhanced with *Maya* and *max* integration



Sometime early in the New Year, DV enthusiasts will emerge from the subterranean gloom and scream triumphantly at the release of *Adobe After Effects 5.5*. The popular package has many new features, including an advanced 3D renderer for producing effects with intersecting layers, multiple views, coloured shadows, stained-glass lighting and a new effects palette offering eight additional effects. New import/export options including support for 16-bit

per channel file formats like Maya IFF, SGI and QuickTime, and the software is optimised for OS X, Windows XP and Pentium 4. *After Effects 5.5* will cost \$649 for the Standard version and \$1,499 for the Production Bundle, which also includes 16-bit colour support, vector paint capabilities, network rendering, motion control, visual effects, 3D channel, and audio tools, and the Zaxwerks *3D Invigorator Classic*, a plug-in designed for easily producing broadcast and film quality 3D graphics.
CONTACT: www.adobe.com

FREE WORLDBUILDER UPGRADE

California's Digital Element has released a free upgrade to its *WorldBuilder 3D* software. Version 3.1 includes accelerated viewports, transparency for area materials, improved anti-aliasing, shadows, leaves, volumetric light, parallel and point light shadows,

areas on 3D meshes, rivers, and grass. *WorldBuilder 3.1* is available either as a stand-alone application or as a plug-in for *max viz*, *LightWave 3D* and *Poser*. To download the upgrade, just pay DE's website a visit.
CONTACT: www.digi-element.com



the jumper

Norwegian 2D, 3D and puppet animation company Bergen Animasjon is receiving attention and plaudits for its debut animated short film, *Hopperen* (The Jumper). Telling the story of a suicidal man who discovers a pair of skis in his attic while attempting to hang himself, which persuades him to take to the mountains instead, the melancholy *max*-animated six-minute short is much in demand at festivals round the world. Go to the site below to take a look for yourself.

CONTACT: www.film.com or www.bergenanimasjon.no



3D
courses

Beaconsfield, UK
The Finishing School at the
National Film & TV School

Following the closure of the Lux Centre in central London, the Finishing School has relocated and is now offering 3D-related courses at its new home, the National Film and TV School in

Beaconsfield. Choose from a short course programme featuring *After Effects*, *combustion*, *3ds max*, *Maya* and *flame*, with prices for five days starting from £450-£700 depending on costs.

Or, if you're looking for a longer period of study, the Finishing School is offering

a revamped version of its renowned Art and Practice of Digital Compositing course. Now entitled the Discreet Complete Visual Effects and Animation Artist, this six-month course will tutor students in the ways of *Combustion*, *flame*, *smoke* and *3ds max*, starting in April 2002. Busy professionals

are also catered for with a selection of weekend courses. Contact the school directly to find out more details.

CONTACT: St. John Walker
T: +44 (0)1494 731462 or
+44 (0)7939 561301
E: sjwalker@nftsfilm-tv.ac.uk
W: www.nftsfilm-tv.ac.uk



Euro bash

Uli Meyer Animation perpetuates some stereotypes with animated German titles

London's Uli Meyer Studios has recently created a 30-second title sequence for a German programme entitled *Made In Europe*. The Eurotrash-esque series features contestants from six different countries performing country-specific oddities, and the only brief for the titles, according to Uli himself, was to reflect the wacky flavour of the concept. The titles, which were created by a team of animators using *Maya* and composited using *After Effects*, feature dancing cancan girls on top of a London bus driven by Picasso crossing in front of an excited Eiffel tower while a Scotsman does a sword dance. Elsewhere, a Spanish Cognac bull emerges from underneath the Arc de Triomphe atop a London Underground train that spits out bumbling businessmen, while a couple of Vikings slap fish into each others' faces. The Pope is seen chasing nuns as a Laplander fishes for the Copenhagen Mermaid while his moose faints on a shell of ice. Pavarotti emerges from a Venus shell, accompanied by bare-breasted dancers, and Zeus puts an end to it all by whacking his ancient TV set.

CONTACT: www.ulimeyer.com



Surrey, UK
The Surrey Institute
of Art & Design

The Surrey Institute of Art & Design has been appointed an official Softimage|XSI training centre. Two 5-day courses are available, taught by certified XSI instructor Nikki Bridgman,

covering Essentials and Production. Continuing development courses in Softimage|XSI, Avid|DS and Toonz are also on offer.

CONTACT: Nikki Bridgman
T: 44+ (0)1252 722441
E: Online feedback form
W: www.surrart.ac.uk

EVENTS

4-6 FEBRUARY Milia 2002

Milia 2002 is a gathering of pros from the games, communication and design industries. Starting with a three-day conference, featuring speakers, demos and a Games Developer Village showcasing the latest games breakthroughs, the conference is followed by a huge exhibition featuring up to 750 companies. www.milia.com

6-11 APRIL NAB 2002

Not strictly anything to do with 3D per se, but the world's largest electronic media show is still a must for professionals in TV or film. Related topics such as broadband and digital video are among the many aspects covered, along with over 900,000 square feet of exhibits from — well, absolutely everyone in the media world. www.annecy.org

3-8 JUNE Annecy 2002

Le festival international du film d'animation, and a jolly good excuse for a jaunt to France. Annecy claims to be the biggest international animation market, offering an exhibition and festival together with the annual awards and a job fair for aspiring professionals. www.annecy.org

21-26 JULY Siggraph 2002

Need we say more? If you're in the 3D 'biz' and you haven't heard of Siggraph, the world's largest and possibly loudest graphics show, there's no hope for you. Although covering all areas of graphics it's predominantly 3D-led and features top speakers, a massive exhibition where all the majors launch their new projects, plus the chance to network like hell. www.siggraph.org

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New wave

Alias|Wavefront finally releases *Maya 4* for Red Hat Linux and *PortfolioWall 1.5*

Alias|Wavefront has released the long-awaited *Maya 4* for Red Hat Linux 6.2 and 7.1, in response to a huge number of enquiries from large Maya-based companies. The featureset and price of the Linux version is identical to its other incarnations on IRIX, Windows and Mac, starting at \$2,995 for *Maya Builder*.

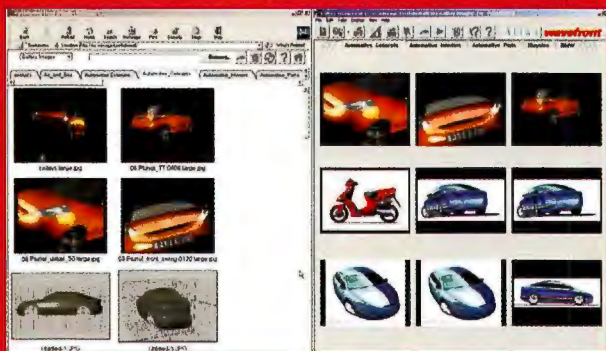
And there was another A|W offering stretching Santa's bulging Christmas sack, albeit one with a quite specific area of interest. *PortfolioWall 1.5* is described as a digital corkboard, and offers users a simple touchscreen interface to view, annotate, collaborate, manage and make decisions on visual data, a bit like an interactive overhead projector. Compatible with many industry-standard display formats, the new version adds sketch and text annotation, the ability to launch third-party applications, and a Maya-based 3D viewing tool that uses a touchscreen interface for panning, rotating,

PORTFOLIOWALL IS A DIGITAL CORKBOARD – A KIND OF FANCY OVERHEAD PROJECTOR

zooming and viewing 3D models on a turntable. It also works on mouse-driven desktop computers as well as touchscreen systems.

It comes in two versions: *PortfolioWall Presenter*, the stand-alone version which is designed for presentations and design reviews is priced at \$3,000, and *PortfolioWall Server*, a networked version designed for integrating design studios and entertainment centres is priced at \$35,000, which includes three *PortfolioWall* clients and unlimited Web clients.

CONTACT: www.aliaswavefront.com



Dual-headed fun from SGI

SGI offers new display options for its Octane2 workstation

The latest display technologies from SGI, Dual Head and PowerDuo, offer enhancements aimed at the professional and technical design industries. Dual Head drives two

graphics heads from the same workstation, with either 32MB or 104MB texture memory depending on whether you go for the V10 or V12 option, and Dual Head can drive up to four monitors using the new dual channel display option. PowerDuo enables two users to share the same dual-processor workstation with separate displays, keyboards and mice. The Dual Head upgrade starts from \$14,500, and the PowerDuo-configured Octane2 for two to share costs \$47,795.

CONTACT: www.sgi.com



3D TOOLKIT ON THE OS X



dvGarage has announced the release of a Mac OS X upgrade to its excellent 3D Toolkit bundle. Consisting of *Electric Image Universe 3D Toolkit* software and a set of supporting tutorials, the Toolkit provides a powerful professional application with support for newcomers for the comparatively low price of \$199. The OS X upgrade costs \$49 and is available now.

CONTACT www.dvgarage.com

PIXELS 3D 4.0

The latest version of Pixels' popular Mac-only 3D software, *PIXELS 3D 4.0*, offers real improvements. A redesigned interface incorporates an Attribute Manager, allowing access to and control over all scene attributes from within one tree-like interface structure.

Modelling options have also been improved, with solid, NURBS, polygonal, metaball and particle objects. Procedural shaders can also be created without programming using the ShaderMaker module, and its creators claim that the shaders rival those of applications costing more than ten times the price. The addition of REYES rendering gives the program the benefits of the renowned cinema-quality render engine, and projects can be saved in RIB format, for use with dedicated hardware. The new version costs \$599, with an upgrade price of \$249. Turn to page 78 for a full review.

CONTACT: www.pixels.net

Mill and Ridley reunite

Ridley Scott's *Black Hawk Down*, features CG from Mill Film

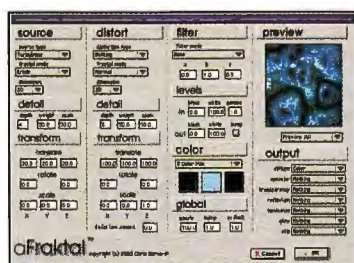
Following the success of their collaboration on *Hannibal*, featured in issue 11 of *3D World*, Ridley Scott has returned to Mill Film for effects work on *Black Hawk Down*. The film is a dramatisation of the Battle of Mogadishu in 1993, an 18 hour-long fight between US soldiers and heavily-armed Somali fighters, which resulted in the downing of two US Black Hawk helicopters and became the longest ground battle involving US soldiers since Vietnam. Mill Film worked closely with the director and created all the visual effects shots for the film, including two helicopter crash sequences, a CG stadium and various atmospherics. **CONTACT:** www.millfilm.co.uk

TripleD filters

TripleD updates plug-ins for the Mac Universe

TripleD, a plug-in developer, has updated several of its tools to run on the OS X version of *Electric Image Universe*. The plug-ins benefiting from the treatment include PowerParticles Basic, PowerParticles Pro, aEdge and aFraktal, with AG Shaders promised before long. For more info on TripleD filters, or to download PowerParticles Basic – and some other useful stuff – for free, point your browser at the TripleD website.

CONTACT: www.tripledtools.com



Young talent

Tango/C4 compo winners

Winners of Tango's Unleash the Talent Inside competition were announced on 6 December. The competition, run in conjunction with Channel 4, has been accepting entries since July, and over 1,000 films were submitted. Tom Britton won the film category for his experimental monochrome vision *Ones and Zeros Didn't Work*, and the animation award was won by first-time animator and Ibiza enthusiast Toby Young, for *Go Mc Mental!* The short features wacky, vivid characters and a dedicated dance soundtrack. To view these and other shortlisted entries, visit the competition website.

CONTACT: www.channel4.com/digitalent



web 3D

ATMOSPHERE ADDS 3D GOODIES

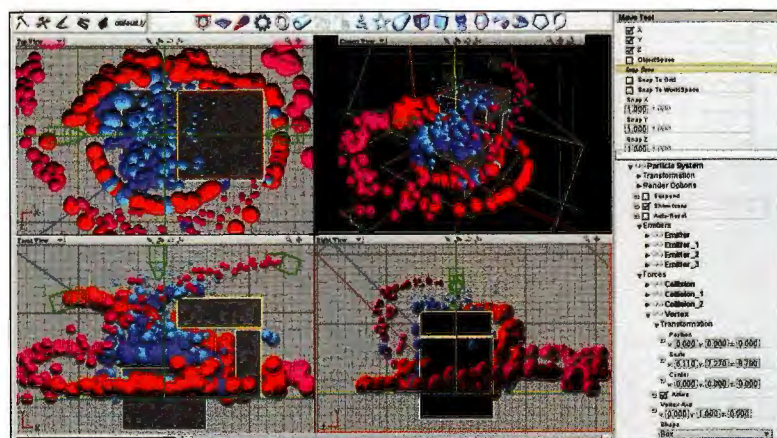
Adobe *Atmosphere*, a 3D Web environment creation package, has added Havok physics support and Vtools Player to the software. The addition of Havok's Hard Core physics engine to the *Atmosphere* Builder tool will give *Atmosphere* users access to realistic physics interactions on a par with video games. Adobe is also enhancing the architecture of its *Atmosphere* Player to allow content created and displayed using other plug-ins to integrate with *Atmosphere*'s worlds, the first of which is Vtools player. **www.adobe.com**

ALCHEMY ARTISTPACK FOR FREE

Intrinsic Graphics has announced a free downloadable version of its game development and testing utility, *Alchemy ArtistPack*, at its website. **www.intrinsic.com**

BLENDER FOR OS X

Na's *Blender 3D*, the egalitarian cross-platform 3D content authoring and publishing solution created by the people, for the people, is now available to people with OS X too. The *Blender 3D* plug-in viewer, enabling non-*Blender* users to view *Blender* work, accompanies the Mac release. **www.blender3d.com**



TRUESPACE FXPAK

As if last month's *AniPak* wasn't enough to keep the *trueSpace 5* audience glued to their monitors, Calligari has assembled another set of seven must-have, third-party plug-ins for its venerable 3D package. With the emphasis on effects creation this time around, the *fxPak* collection offers many solutions to the production of natural effects like fire, water, smoke, water, haze, particle effects, complex shader effects and other special effects fare. *PyroCluster* is a real volume tracer plug-in for fire, smoke and other pyrotechnics and particle effects; *ShaderMagic* provides a friendly interface to *trueSpace*'s shader API, *PrimalParticlesFX* supports a wide range of 3D particle effects; *u/v cow* is a UV mapping editor; *Shady* is a collection of 16 custom *trueSpace* shaders, including vertex and wireframe shaders; *trueParticles* is another particle solution, and *Ripple Rain 2.5* is a rain generator which only requires a single render to get your water running. The whole bundle is commercially valued at over \$600, but it's yours for \$199. If you head over to the website and order quickly, you may be able to pick it up for the offer price of \$99. **CONTACT:** www.calligari.com

MATCHMOVER SUPPORTS XSI

Realviz has added support for the Softimage .XSI file format to its *MatchMover 3D* tracking software. The update will be available in version 2.1; visit the website for more details.

CONTACT: www.realviz.com

CINEMA 4D XL 7.3

The latest update of Maxon's animation software, available free to current users, has added integration with Adobe *After Effects* to the featureset.

CONTACT: www.cinema4d.com

MAYA COMPLETE 3.5.1

Alias|Wavefront is offering a free upgrade of *Maya Complete 3.5.1* for OS X 10.1.1. See its website for more info.

CONTACT: www.aliaswavefront.com



Real-Time Author

Alias|Wavefront and Macromedia look to plug-in to herald a new era of 3D on the Web

The Web 3D capabilities of *Director 8.5* were already sufficient to get many interactive developers hot under the collar when it was released in Spring 2001 – the release of the software was a clear signal that 3D Web content was not only here to stay, it was ready to evolve. The fallout from the recent mixed fortunes of the online industry hasn't chastened the major players in this arena, either, and with Alias|Wavefront and Macromedia now working together to create the *Maya Real-Time Author* plug-in, the companies are building on, and incorporating the capabilities of, the original Shockwave 3D exporter, and essentially re-asserting their original aims. "Interactivity is the catalyst that will drive widespread adoption of 3D on the Web," says Mike Wilson, director of 3D interactive technology at Alias|Wavefront. "It's what makes 3D compelling. Our goal with RTA is to extend the reach of Maya artists to encompass interactive authoring and then to connect them to the most capable and universally available rich media authoring and playback solution available."

Maya RTA enables the creation of sensors, actions and interactive viewers or controllable 3D cameras from within the *Maya* interface. Sensors detect events that occur in a *Shockwave* scene and trigger actions; these sensors and actions are linked together in the software so that a keypress, mouseclick, collision or approach will trigger a pre-defined animation, sound, hyperlink, or switch to a camera that is configured for the type of 3D data being viewed. These actions are created inside *Maya* using *RTA's* Interaction Editor, which also allows the creation of behavior networks and adheres closely to the existing node and connection metaphor of *Maya's* familiar Dependency Graph architecture. Once set up, the *Maya RTA* data is exported as native *Director Lingo* scripts, which can be modified by *Director* users as normal. Using *Lingo* as the export language also assures that *Maya* output published to the Web can be viewed in the standard Shockwave Player with no extensions required.

Maya RTA for Windows is priced at \$995 and is available to download from the Alias|Wavefront website or on CD. CONTACT: www.aliaswavefront.com

Mister Woper

A fully CG Bruce Lee is set to star in a planned new release from South Korean filmmaker Chul Shin. The prolific director is rumoured to be developing new simulation software to recreate the martial artist with unsurpassed realism, in a \$50 million project that will be the first to resurrect a dead star. CONTACT: <http://koreanfilm.org>

MOVERS

After less than a year at the company, **CINESITE'S DAN LOMBARDO** has become VP Production at **CINESITE HOLLYWOOD**. Lombardo's glittering career in the VFX business includes work for Amblin Entertainment, Digital Domain and CFC, with contributions to films such as *The Fifth Element* and *Armageddon* among his credits.

ALIAS|WAVEFRONT has said that several of its employees have been granted patents from the US Patent Office for innovations in 3D and techniques. The five patents, for innovations in areas such as fluid simulation and modelling using point cloud data boost the company's total to 30.

TOM HERSHEY has become Senior VP of Operations at **SONY PICTURES IMAGEWORKS**. His new role will include leadership of console game development.

DREAMWORKS animator **UMESH SHUKLA** has won an award at InSea, the India and Southeast Asian Animation Competition, for his short entitled *Still I Rise*.

London 3D and effects company **LOST IN SPACE** is representing a new crop of designers and directors, including: **ROB RAE, LEO MARCANTONIO, TOM MULLER, & CHRISTIAN HOGUE**.

PERFORMANCE PACK

Users running Discreet's *3ds max 4.2* on a Pentium 4 processor can take advantage of the Pentium 4 performance pack, an optimisation solution said to deliver performance gains of 30%, enhancing rendering and animation operations. The software, which will also improve the performance of *max 4* on Pentium 3 systems, is available as a free download from the Discreet website.

CONTACT: www.discreet.com/products/3dsmax/p4

TS A SETUP

Anzovin Studio is offering a Windows and Macintosh beta version of *The Setup Machine*. The package is a software tool for installing an animation rig into any humanoid created in *Hash: Animation Master*. The beta version costs \$50 from the Anzovin website.

CONTACT: www.anzovin.com/setupmachine.html

AN OS WITH A VUE

OS X users will now be able to take advantage of *Vue d'Esprit 4*, e-on Software's 3D landscape creation tool par excellence. The latest version of the program has been optimised to improve its rendering speed by as much as 40 per cent, and added new features such as *Poser* import, a volumetric atmosphere system and camera control centre. *Vue d'Esprit 4* is available in English, French, German and Japanese language versions, and costs \$199. There are plenty of upgrade options at cheaper prices though, so visit the site below to find out more.

CONTACT: www.e-onsoftware.com

SWIFT XSI

Electric Rain has released a plug-in incarnation of its existing standalone vector-based 3D rendering application *Swift 3D* for Softimage|XSI. *Swift3D XSI* is capable of outputting Softimage scenes to a variety of file formats, including Flash's .SWF, AI and EPS, and costs a mere \$475.

CONTACT: www.swift3d.com

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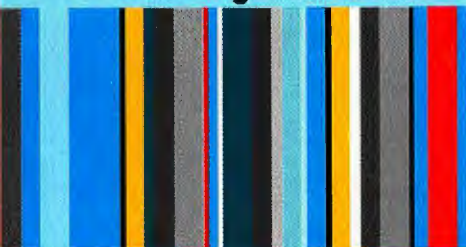
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SUBJECT: WHERE ANGELS FEAR TO TREAD

May I jump in where angels fear to tread? I'm a 3D neophyte and I've found it interesting to read the letters sent to your magazine regarding the quality of software and the definition of art.

I've had the good fortune to wander a little around Rome, and I'd agree with the observation that no-one has ever sculpted in marble to a finer degree than Bernini; his works of art are absolutely magnificent. Yet if I were ever forced to make a choice, and I hope I never have to in reality, I'd prefer the unfinished sculptures of Michelangelo – "The Prisoners" – because they are to me greater works of art. So to those who tout this or that software: maybe there is a difference in what the software can do, but as to creating a work of art, that depends on the artist and how he exploits the limitation of his tools and technique to create a "work of art."

How does one assess something to be a work of art? That I do not have the intellectual gifts to elucidate. All I can say for myself is that the greater the work of art, the better it is organised, although I freely admit I could "read" something and miss the point (i.e. fail to understand it). This sense of organisation was prompted by listening to two piano sonatas, one by Gade and the other by Grieg. (I believe Grieg dedicated his sonata to Gade, his tutor.)

Have I missed the point of the discussion in the letters?
Edward Hearn, via e-mail

SUBJECT: HIGH TO MIDDLING

I recently read your review of *LightWave* in your magazine (issue 19) and can only say you're doing the graphics community a great disservice. You obviously dislike *LightWave*, and this is of

course your opinion. However, to say it's positioned somewhere between the high and middle-ends of the 3D market is nothing but a lie, unless you're referring only to its price. Raise your eye to the top of the same page that this statement is printed on and you'll see in your own magazine a still from the movie *Driven*. This is not middle work. The fact is, more film effects are created using *LightWave* than any other off-the-shelf package.

LightWave is and has always been exclusively a high-end package. You made the statement that it's used by professionals and hobbyists. This is true, because it's the lowest cost high-end package on the market. In this same frame of mind, I refer you to the history of Ron Thornton versus SGI and the story of *LightWave* in TV and film production. Most people that have been in graphics for a while know your statement is BS, but people starting out will be misled when reading your reviews.

Allisa36, via e-mail

Am I missing something here? I'm somewhat confused by your whole letter. First, there's your statement that we "obviously dislike LightWave." Which is why, presumably, we gave version 7.0 four stars out of five and said, "It's a powerful, production-proven system, capable of producing a very high quality of work in a highly streamlined, user-friendly environment." The author, Ben Smith, should know: he's the head of Stormfront Digital Pictures, a UK company which uses LightWave pretty much exclusively for its many commercial projects. Then there's the slavish splitting of hairs over whether LightWave is middle or high-end. As we stated, we see it as upper-middle, but at the end of the day, does it really matter? Surely the fact that we printed two stills from Driven, a Hollywood film, gives a clue as to LightWave's widespread industry usage? (Oh, and if you're going to make statements such as the one about LightWave being the most-used package for film effects, you really should have some sort of concrete proof.)

Funny how people get so attached to software...

SUBJECT: ECHOES OF THUNDER

You recently reviewed our product *Thunder* (issue 21). We see from the review that the 3D Word Verdict is four stars out of five for two reasons: "Only one sound per emitter; Annoying copy protection." We'd like to make a couple of comments on these:

Only one sound per emitter – "which seems something of a basic omission"

This was intentional by us. Each sample can have all of the parameters of an Emitter. If you could play

LEFT
3D World
dislikes LW?
Well, that's
news to us...



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STUDIO
VIEWS

more than one sample on each Emitter, each sample would need its own panel to cater for all of these parameters anyway. You could not alter the volumes or frequencies of two samples on the same Emitter panel, for example – it would have to be done uniformly.

Even with uniform changing of parameters, the size of the SoundEmitter panel in general would have to increase. It's far easier to set up a SoundEmitter with one WAV, then simply clone it and change the WAV. You then have two identical SoundEmitters with different sounds which is the same effect as playing two sounds from one emitter. Changes to the triggering of an Emitter can be applied to the other Emitter(s) using the Copy/Paste key function in the Track View.

Alternatively, two SoundEmitters can be rendered (preferably as Overlay sounds) with two different sounds playing at the same time. The rendered output can then be used as a new source sample and attached to another Emitter.

"Annoying Copy Protection"

You actually received a review copy of the product with full copy protection, which, as you stated, means you have to insert the CD each time. The copy protection on the full shipping product enables the purchaser to register within 14 days online, thereby no longer requiring the CD to be inserted each time the buyer wants to use the product.

To maximise the potential detriment on our sales, we would be grateful if you could include this in the next issue.

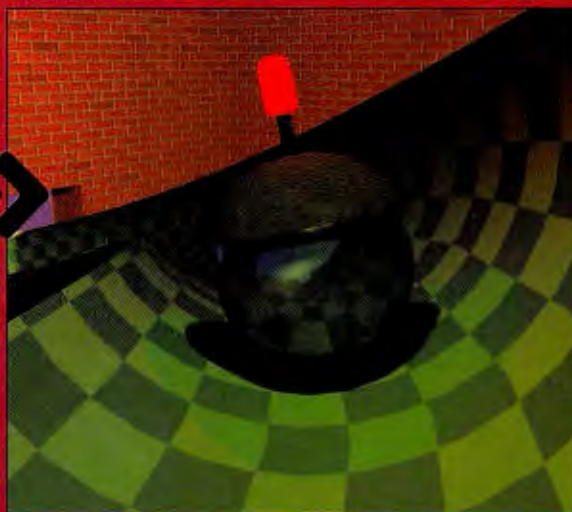
Steven Markham, Co-Founder & CEO, Cubicspace

Fair dos on the copy protection front. I didn't realise this was the case – consider that comment stricken from the record. As to the Emitters issue, it would still be nice to have the option to have multiple sounds, perhaps for more advanced users who don't mind fiddling with oodles of controls. After all, some control panels for 3ds max plug-ins have pages upon pages of controls and no-one seems to mind those.

In light of all this, I'm sure we can bump up the score to 4.5. Hope that clears things up.



RIGHT Contrary to our review, you don't need to insert the CD every time you want to run the full version of Cubicspace's *Thunder*; the copy protection is disabled once you register online. Sorry for any confusion.



FROM THE FORUMS Have your say or get advice in our forums at www.3dworldmag.com

SUBJECT: Photorealism – is it really dead?

Mayco:

Well, just got my new 3D World mag today, and it appears that photorealism is dead! So soon? What's your opinions?

Dean Wray:

I suppose it depends on integration with real media, or artistic statements. A lot of people in my industry (and my company!) argue that the games we create have to have some artistic style that's different from the norm (e.g. toon shading, like Jet Set Radio). My argument is this: photorealism, like toon shading, is a style... However, for games, unless you appreciate how the style came about, the arguments, the thinking behind the path that led to the eventual style, can

you really appreciate it, judge it, have a valid opinion? Realism is the main style people can relate to and judge in their own minds to any degree... Long live realism!

EssieP:

I agree about photorealism being a style; it's not the same as realism as seen with the naked eye. Lens flare, depth of field, etc., are examples of how photography is not "realist." My worry about the article referred to is the rather slim understanding of art history in the Western world – that reference to pre-20th Century artists striving for realism is rather hard to justify, I think. I'm also rather puzzled by the continued need to question "Is it Art?" Could we replace it with – art is a form of communication, does the picture communicate to the

intended audience, the intended meaning? It's all art, so don't get mixed up with art you don't like or art that has no apparent meaning with failure to BE Art.

SUBJECT: Don't forget Swansea

Ant:

I was reading your article on 3D courses in the UK, and I thought I should read up about the degree program I'm on. Strangely, it wasn't there. There has been a Multimedia BA at Swansea Institute of Higher Education (note: it's different from Swansea Uni!) with computer animation for years, and a full 3D Computer animation BA and BSc for nearly two years, as well as an HND and an MA starting next year. I think you should check the UCAS book. It seems a good course so far and we're being taught a lot about film and pre-production as well. We use Maya Complete on several rooms full of computers and it seems much more well equipped than, say, Portsmouth (who admitted that they didn't have enough computers).



the ART OF NOISE

It's fast-moving, glamorous, and offers unparalleled creative freedom – could the dynamic world of the music video provide the ultimate playground for CG artists?

BY MARK RAMSHAW

Since MTV began transmitting on 1 August 1981 the promo video has become a crucial weapon in the music industry's arsenal. Video might not have killed the radio star, but it has completely changed the way music is promoted, and turned countless artists and bands that would never have succeeded with radio airplay alone into worldwide pop, rock and dance sensations.

But with the heavy rotation and diversity that 24-hour music TV channels and video-based chart shows offer comes sensory saturation. It's all too easy for costly videos to become audio-visual wallpaper, appearing to merge seamlessly into one another. There are only so many times you can shoot a singer walking down a crowded street, or have a teen band play out their synchronised dance moves in a sterile studio. Record companies and video directors must constantly come up with new ideas to create eye-catching video that will, in the first instance, even get chosen for airing, and then stand out from the visual stream spewing forth from MTV and its ilk.

This search for new ideas and visual tricks has made CG an indispensable tool for music video makers. What doesn't exist can be made real, and what time and budget don't allow to be shot live can be digitally faked.

CONSTRUCTION TIME AGAIN

Tonia Wallander, a producer at Santa Monica-based Pixel Envy sums up the appeal of music video work perfectly when she says: "We're almost like a guerrilla band of artists, with two to six 3D people working on a video, and just 30 days to put it

together. It's a lot of pressure, with people pulling day and night shifts when time is short, but it really is a lot of fun."

In addition to producing ad spots and contributing effects work to shows such as *X-Files*, and movies such as *The Family Man* and *Rock Star*, Pixel Envy has been responsible for some of the most memorable American videos of the last few years. Its credit list includes full CG videos such as the promo for Red Hot Chili Peppers' *Californication*, as well as effects-laden live action videos such as Korn's *Freak On A Leash*, Creed's *My Sacrifice*, U2's *Elevation*, and Jennifer Lopez's *Play*. (The latter may not appear to have much CG content, yet uses digital sets throughout.)

"We've done something in the ballpark of 20-25 music videos this year," reveals Tonia. "Obviously the more we do the more we get to work with better-known acts, such as Destiny's Child or Aerosmith, although it's fun because that's also balanced with bands who I really have no idea about."

Pixel Envy has its own in-house directors – brothers Greg and Colin Strause (also co-owners of the studio) – but also regularly works with external directors. "The fact that Greg and Colin also direct is an added bonus for the other directors we work with," says Tonia, "It brings a greater understanding, and another level of creativity to the process."

MAIN The *Let Love Be Your Energy* promo is fully computer animated, with director Olly Reid creating a CG cartoon Robbie looking for love. Rather than

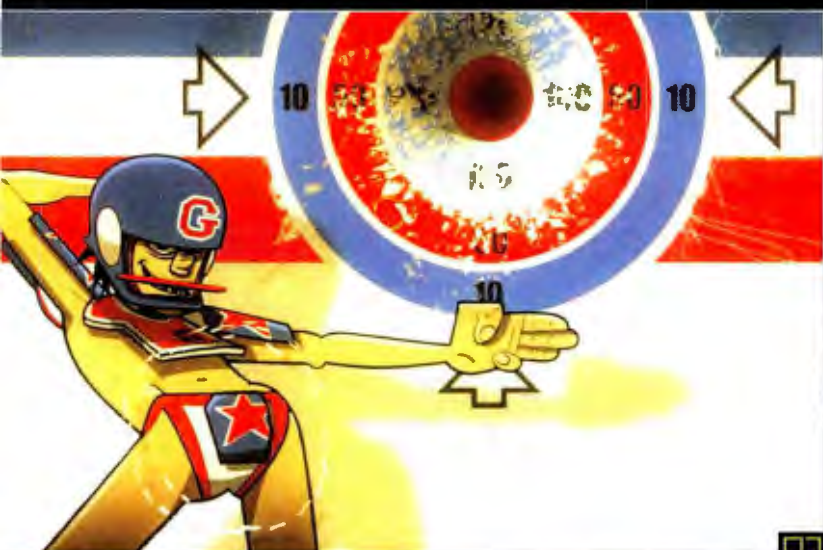
balk at such irreverent treatment of the star, the record company encouraged Olly to let his imagination run riot.
© EMI Parlophone



RIGHT The ever-idiosyncratic Bjork in the promo for *The Hunter*, with CG head appendages courtesy of Digital Domain. "It still comes down to great songs, great ideas, and great artists," say Ed at DD. "There are so many forgettable videos made, including big-budget ones, with effects for effects' sake. It's the rare ones that pop through, when a great filmmaker has a great idea that's perfectly executed."

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Entertainment Group





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[03/04] Mike Oldfield's *Let There Be Light* gives Eye the opportunity to adopt an epic fantastical CG style.
© WEA

WHILE REPUTATIONS ARE OFTEN MADE FROM PROMO WORK, FORTUNES USUALLY ARE NOT

Adaptability is clearly the key when working on so many projects, and when collaborating with so many different bands and directors. "It's a little different every time. Because of the short development times and low budgets, not all videos are even storyboarded. And even when you do have one, it tends to change. You can easily have a sequence that's going to last for two minutes, only for it to be cut to 20 seconds. Or you'll find that the artist isn't a very good dancer, and so those scenes have to be cut down and replaced with something else. Things tend to change an awful lot."

ALL YOU NEED IS CASH

The good news is that music videos don't usually require mega-budget 3D effects, so smaller studios and even lone animators are in with a chance. Tim Hope is a perfect example

of home animator made good. Having created an award-winning short on his PC he quickly graduated to promo work, and his videos for Coldplay are now considered some of the best around.

The bad news is that the reason mega-budget 3D isn't required is that it's pretty much out of the question. Record companies just aren't willing to pay very much for a promo, unless it's a prestige piece for a multi-million selling artist. "A typical budget on a music video is around \$400,000," says Tonia. "I'd guess there's only ever been about a dozen costing a million."

Such a limited budget makes things hard enough for live action. Any attempt to add 3D animation without going into the red and the problems can really begin. For the smaller studios with low overheads it's clearly less of a problem, but while reputations are often made from promo work, fortunes usually are not.

[01/02] Clean lines contrast with rendered grittiness, and 2D integrates with 3D, giving Gorillaz' *Rock Da House* video a style that sometimes has subtle echoes of *Flash*-based web animations.

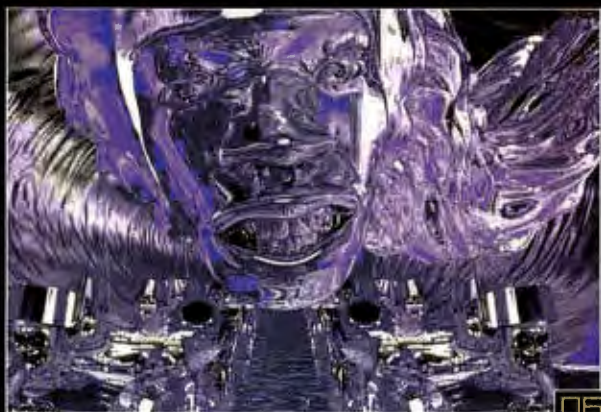
© EMI Parlophone

[05] "With the Busta Rhymes and Janet Jackson *What's It Gonna Be* video we thankfully had a more forgiving schedule, which allowed us to push things further," says Ed Ulbrich at Digital Domain.

© Elektra Entertainment Group

[06] "One of the key reasons for taking the work was to build a relationship with the director, Hype Williams, as we've done in the past with people like David Fincher."

© Elektra Entertainment Group



EYE SIGHT

With a music video history stretching right back to 1993, Eye Animation Studios founder Ian Bird has a better understanding of the role of CG than most. From ground-breaking work on Pet Shop Boys' *Liberation* and Soundgarden's seminal *Black Hole Sun* promo, through to more recent creations for Placebo and Geri Halliwell, his team has helped create some of the most memorable images ever to grace MTV.

"In fact, we've only ever worked with one pop promo director, Howard Greenhalgh," confesses Ian. "He approached us to work on *Liberation* after seeing some of our ident and commercials work and we've continued to work together ever since." The situation has several advantages, not least that both director and animation studio have a rare rapport and confidence with one another. Howard's impressive reputation has also made the job of incorporating CG into videos that bit easier.

"Obviously time and money are always the killers, but because Howard is known as one of the top directors we've been able to get more money than many other studios do. Even so, we tend to mix live action with

the CG because the schedules are still so screamingly tight. Instead of showing off, or trying to be clever with software that requires R&D, music video work becomes more about coming up with interesting images and layouts, going for style and execution to create something arresting." Ian likens the work to graphic design, with the time limitations often inspiring a high degree of creativity. "You tend to find a solution to a problem a lot quicker, and often ultimately get a better result."

Although these are undoubtedly exciting times for CG-based music video work, Ian believes things are going to get even more interesting in the near future. "The Internet and TV are merging so quickly now. Once we have a dot TV scenario I think we'll see a new breed of imagery and style, leaning more towards multimedia and becoming much more anarchic. The only thing that people will judge content on is viewing figures, and we might yet even have the TV equivalent of Napster. Once all the technologies completely merge, people won't download songs, they'll download a whole interactive promo."



Eye's first promo, for Pet Shop Boys' *Liberation*. Created in *Explore 3D*, it was probably the first time most people had seen particle replacement, which was used extensively in its production.



One of the studio's most recent efforts, the promo for Placebo's *Slave To The Wave* utilises a striking 3D shredding effect. "It's actually just a little software program written here."

Over at Shynola, Chris Harding and his colleagues have gained praise for both their advertising and music video work. The outstanding promo for Radiohead's *Pyramid Song* is one of theirs. "Sometimes we will do a commercial for loads of cash, sometimes there won't be so much, and the same goes for videos," he says. "We are more likely to make a low-budget music video than a low-budget ad, though. It's hard to be enthusiastic about an advert for toilet paper or something if you're not being paid well. If it's a video for a band you really love, on the other hand, then it doesn't seem so bad to spend a month or two slogging your guts out without the promise of a fat cheque."

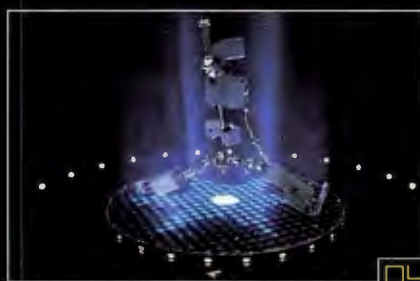
California-based Digital Domain is one of the giants of the CG effects industry. Its effects work can be seen in numerous high-profile movies, including *Titanic*, *X-Men*, *The Grinch* and

the forthcoming *Time Machine*. Such long-term projects are run alongside smaller scale jobs handled by the Commercials division. This division of the studio has also worked on a number of high-profile music videos over the years, applying generally filmic effects to promos for songs by Michael Jackson, The Rolling Stones, Bjork, and Busta Rhymes.

Ed Ulbrich, head of the Commercials division, explains the pitfalls of music video work for such a large studio. "Most videos are very, very low budget. Even the two Rolling Stones videos we worked on weren't moneymakers, they were treated as showcases. The problem is, when you have artists used to working on very high-end projects it's hard getting them to take the shortcuts necessary to work within low-budget parameters. And while I know other studios have used music video work as a training ground, I think it's a very dangerous

PICTURE COURTESY OF: © EMI Parlophone

PICTURE COURTESY OF: © Virgin Records Ltd



[01/02] Working photography, live video and 3ds max rendering into the videos, Tim's promo for Coldplay's *Trouble* has a cut-and-paste visual style that's at odds with the glossy graphics used in promos for other stadium bands.
© EMI Parlophone

THE PAY IS LOUSY AND THE HOURS ARE LONG, YET MUSIC PROMO WORK ATTRACTS SOME OF THE VERY BEST CG TALENT

[03] While a fair amount of music video CG strives for at least some degree of realism, some of the more interesting videos, such as this one for Counting Crows make a virtue of their artificial elements. Animation is by Eye Animation Studios. © Geffen Records

[04] The video for Playgroup's *Number One* is almost laughably simple yet a joy to behold, thanks to intelligent use of lighting and great character animation. A PC tower sprouts arms, head and legs, then begins disco dancing. © EMI Parlophone

and slippery slope. This is a one-shot thing – if the end result isn't satisfactory, you don't get another chance. It's just too potentially damaging."

ROCK AROUND THE CLOCK

And it can get even worse. The 30 days of development time quoted by Tonia at Pixel Envy is only an average, and this actually encompasses all aspects of the video, from the initial hiring of the director and CG team to the final compositing. Incredibly, only eight days were available when the studio worked on the Destiny's Child *Independent Woman* promo. "You're often turning around 120 shots in maybe just

10 days, which would be inconceivable in any other area of CG," adds Tonia.

"That's the reason we're not more actively involved in videos right now," says Ed at Digital Domain. "We just can't add a level of 3D to our video work that's sophisticated enough to motivate our artists. Typically we get briefs that are fantastic, but the schedules immediately preclude you from being able to pull off the sort of work that's going to meet everyone's expectations."

Dom Buttimore, director of 3D at Moving Picture Company agrees with Ed. "The lead times are appallingly bad. Mix that with bad money and you've got the worst possible combination. It's like a triangle, you can have quick, cheap, or

ROBBIE ON THE RUN

Olly Reid on his role as director of the Robbie Williams *Let Love Be Your Energy* promo (created with Passion Pictures): "With music videos, the briefs tend to be quite open. You don't have to interpret the songs literally, you can just use them as a

backing track, so they're hiring you to be an additional part of the creative process, to bring as much to the table as you can.

"With the Robbie Williams promo I was given complete freedom, and in the end the record company even pushed for me to

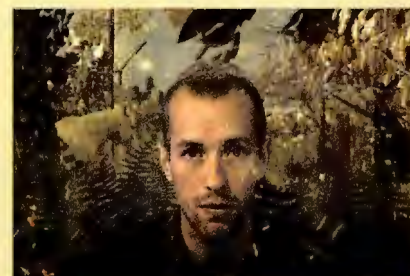
include more extreme things! I do wonder if it was a mistake going for a fully CG Robbie, though. So much of Robbie's appeal is to do with his image, so I don't know if it was right to use a CG version of him instead."



A NEW HOPE

Tim Hope's transformation from stand-up comic to music promo producer has been a fruitful journey...

The ultimate poster-boy for CG use in music videos has to be Tim Hope. A one time stand-up comedian, Tim first rose to prominence in 2000 with his award-winning CG short *The Wolfman*. Making the leap to music video his debut effort for King Biscuit Time's *I Walk The Earth* also picked up a prize at the Annecy festival. And now he's earning more awards and plaudits, working with Passion Pictures (with co-directors John Harmer and John Williams) on the *Trouble* and *Don't Panic* videos for Coldplay.



For Coldplay's *Don't Panic*, Tim chose a more convincing visual style. Although more glossy than the promo for *Trouble*, the results are still highly stylised.

[OS] "We were also lucky in that we were given a little more time than is usual," says director Olly Reid of his *Robbie* video. "But then the way the deadlines force you to come up with creative solutions is part of the challenge of music video work."

© EMI Parlophone

Tonia acknowledges that the pressure and long hours are a real problem. "There's also a certain level of frustration experienced by the artists because of that. They'd always like to spend more time refining their work, but that's just not possible because videos have to be ready to air, because MTV are due to premiere it or whatever."

MOVING PICTURES

So the pay is lousy, the hours are long, and the deadlines are the worst in the industry. It should be enough to put off all but the fastest and most undemanding of artists. Yet, time and again the freshest and most innovative 3D work crops up on MTV, and some of the brightest and best talents around the world are prepared to put up with this testing production environment. For many, working on music videos is far preferable to creating CG for ads or putting together movie effects.

Ads tend to be shorter in length and need overtly to push a message or brand, and thus tend to be more tightly managed. As for movie and TV series effects, prestigious though it can be, the actual CG requirements are generally locked right down, and most are based on a desire for photorealism. For designers looking to go wild, the music video is the place to do it.

"The upside of these short schedules is that you get to see your work out there within the space of a few days," says Tonia. "And instead of working on the same project for months on end you get to work with loads of different people."

"I'm not sure it's like any other medium," adds Olly Reid, director of the Robbie Williams *Let Love Be Your Energy* promo (created with Passion Pictures). "In fact, it's a bit of a shock to be given so much freedom."

Although best known for his commercial work (the milk ads featuring cartoon versions of Chris Eubank and friends were his), Olly is keen to delve further into music video work. "I definitely prefer it, it's just a much more creative process, whereas ads are basically about cramming in as many messages as you can. That's not really an exercise in filmmaking. And

good – or two of those, but never all three. For more 3D, we need better lead times. Please!"

Granted, technology has dramatically improved since the days of the ground-breaking promo for Dire Straits' *Money For Nothing*. But as with other areas of computer graphics, the marvellous incremental increases in power never seem to make the creation process any faster. Instead, it's used to render more complex geometry, add extra passes to scenes, and throw around particles, fur, and lighting.

"The work is like water, with each job taking up the space you give it," continues Ed. "Giving an artist more power is like giving them a new crayon – they're bound to use it. We've found that better technology means we can push things further, and make work that much more complex, but it never, ever saves time."

He believes the time restrictions will ultimately deter many other artists from music video work. "I imagine if you ask the digital artist who has to work until four in the morning for two weeks straight, purely because they're trying to cram in work that should really take six weeks, they'd say they prefer working for film. With adequate time and funding it could ultimately be more rewarding to work on music videos, but I don't see the current situation changing."



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[01] Using motion capture by Audiomotion, Pison created a whole club filled with dancing skeletons for The Chemical Brothers' landmark *Hey Boy, Hey Girl* video.

© Pison & Virgin Records Ltd

[02] Unsurprisingly in-house videos tend to be effects-laden affairs, such as this spectacular sci-fi epic for Powerman 5000's *Bombshell*. © Dreamworks

[03] As well as supplying CG effects for music videos (plus movies, TV series and commercials), Pixel Envy also directs a number of promos in-house. These are created by co-owners the Strause brothers. © Dreamworks

[04] The CG animated promo for Superman Lovers' *Starlight* is one of the most striking of recent months, featuring puppet-style animation and excellent model and texture work. "It's interesting to see what's coming from France, they seem to have more flair," says Olly Reid. "There's a much more illustrative feel to a lot of European videos, rather than the ones using filmic effects that tend to come from the States."

© Independentie

once you start working on music videos you find you start having ideas for them all of the time."

"With commercials there's usually a lot more bureaucracy involved," explains Chris at Shynola. "In our experience, you pitch an idea for a music video, and if the artist and record company like it you go ahead and make it and no one sees it until it's finished, and often nothing – or little – gets changed."

Ed at Digital Domain isn't so sure. "It's not really about one medium or another. It's more about working with people and building up a relationship. If you have a director who is confident enough to work collaboratively, then that's what makes a project fun."

He does, however, see the unique benefits of the medium: "I do believe it's the closest thing we have to a true art form in this industry, even though the videos are really commercials created to turn bands into brands and sell their singles and albums. It's because there are no tests or focus groups, so for a filmmaker and artist it can be the closest thing to creating art, short of funding their own film work."

"IT'S THE CLOSEST THING TO A TRUE ART FORM IN THIS INDUSTRY"

Music video work also clearly offers benefits to a studio like Digital Domain. "With a project where the level of creativity is high, the artists available to work fit the project, and you maybe have a newly mastered technique that can be easily applied, then you can really gain a competitive edge and use the work to advance the brand of the studio."

PORTRAIT OF AN ARTIST

A side effect of the need to come up with fresh, attention-grabbing visuals is that no two jobs are ever quite the same, ranging from live action promos, employing the sort of filmic

■ PYRAMID SELLING

Firm proof that the music video can be a valid artform, Shynola's gorgeous promo for Radiohead's *Pyramid Song* uses complex rendered 3D and overlaid 2D elements to wonderful effect.

"The look of the *Pyramid Song* video was entirely of our devising, the story is an abstraction from an e-mail Thom Yorke [Radiohead's lead singer] sent us explaining the song's lyrics," says Chris Harding at Shynola. "It was about post apocalyptic world where all the survivors were on the

deck of an aircraft carrier since all the cities had flooded. We just changed it to one person, making it easier to animate, and had him swim to the seabed. We then storyboarded the promo, shot each frame on video and cut it together to see if it fit the song. After that, it was just like colouring in the drawings. The lights in the sky at the end of the video were all part of Thom's dream too, they were supposed to give an uplifting feeling to such a tragic story.

"Making music videos is a great way for

any artist to make their work known, be they a CG artist, traditional animator or live action director," sums up Chris. "The best piece of advice I can give to any budding CG artist hoping to get into music videos, is concentrate on your story, rather than the techniques you are using. It's far more interesting to see stick figures that you can identify with than an amazing piece of modelling where nothing happens that people can relate to. And no chrome or lens flares! Well, maybe just a little..."



music with an animated promo. Tellingly, Spiller's *Groovejet*, with guest vocals by Sophie Ellis-Bexter, was accompanied by a live action video. For the latest, Sophie-less single the promo is a CG affair, featuring animated fruit engaged in Busby Berkeley dance routines.

Of course, videos relying totally on CG can be rather more challenging than those that employ only spot effects or digital set extensions. The greater the 3D content, the more work is needed from the artists, rarely with any extra time built-in to the schedule to compensate.

"The trick," says Dom Buttimore, "is working out how to do your 3D within the constraints. You're not necessarily trying to produce scenes from *Harry Potter*, you're producing great work given the time and budget you have available."

"It's an awful lot of work to squeeze into that timeframe when you've got any significant amount of 3D," agrees Tonia at Pixel Envy. "That tends to mean studios like Pixel Envy attract a different kind of artist to the ones that work at places like Pixar."

There are compensations, not least the ability to render out for NTSC and PAL (until high-definition TV becomes a reality, at least). "There's definitely something to be said for working to

[07/08]

For the *Supersonic* video, put together at Moving Picture Company, Jamiroquai's Jay Kay was filmed strutting his stuff on motion rig at quarter speed. He's then composited into a CG environment (created by Pison) of giant light bubbles, moving walkways, and stadium-sized LED displays. © Sony

CG tricks typified by Digital Domain's work, to completely abstract, fully digital animations.

"A lot of the work we do is still based around CG interacting with live action, or placing the live element into a synthetic environment," says Tonia at Pixel Envy. "Digital set extension is ideal for music videos, making it possible to build virtual sets that are far better than the ones time and budget would otherwise allow. But while there is some demand for photoreal, a lot of directors do want something a little more fantastical."

The last few years have also seen the pure CG videos become increasingly popular. "It's ideal for very confident bands that don't need to advertise their image anymore," says Dom at Moving Picture Company. "The Chemical Brothers are a classic example of this. Another is Radiohead, the band's move away from video appearances perfectly reflecting their music's move away from the mainstream."

"It's certainly helped us in our career," says Chris at Shynola. "And, of course, the situation is now being deliberately fabricated by acts such as Gorillaz. It makes for a lucrative corner of the market. People are fickle, though, so who knows if the trend will continue."

While the whims of the larger bands may change, the continued popularity of dance music should ensure that CG animated promos remain popular for a long time to come. Many dance music artists are faceless bedroom musicians or studio boffins, not best suited to appearing in their own videos. For such 'non-stars', it makes perfect sense to promote the

broadcast resolution," says Tonia. "It's so much faster, and things like knowing the colours will come out exactly as you'd expect also make a difference."

Tonia is in no doubt about where the music video industry is headed. "For better or worse, unless something looks pretty spectacular, visually interesting and different, then people will lose interest quickly. That means the bar just keeps getting raised higher and higher, and it's only by using computer graphics that it can go to a different level."

"I think we're going to see things diversify a lot more," concludes Olly Reid. "Because we can't compete with the *Toy Story*-style of CG, it becomes necessary to find more creative ways to get visually pleasing results. I think that'll lead to more multimedia-influenced videos, with things like *Flash* even having an effect."

Whatever the form, computer animation looks set to become a more dominant tool for music video production. Music and video are now forever entwined, therefore so as long as singles and albums are released, so they'll be promoted using cutting-edge eye candy. For artists and animators with the willingness and ability to operate in a fast-moving, sometimes volatile environment, CG music video may well be the new rock'n'roll.



[05] Pixel Envy's award-winning video for Red Hot Chili Peppers' *Californication* places the band in a video game interpretation of their LA hometown. The entire video was put together in just six weeks, gradually evolving into a much less photorealistic style than originally envisaged. © WEA

[06] New metal bands, such as Linkin Park, have proven particularly suitable for CG video treatment. This appropriately jagged video for *Crawling* was created by the ubiquitous Pixel Envy. © WEA



Mark Ramshaw is a long-standing contributor to many games and design magazines and is a *3D World* mainstay with plenty of features under his belt.

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cheaper than the real thing

3D CG isn't as expensive as you might think – but many prospective clients are still scared off by its old image as a costly luxury

BY ALAN BASSETT

THE MISCONCEPTION
THAT ALL ANIMATION IS
EXPENSIVE CONTINUES
— EVEN TODAY...

Over the last five years, the 3D animation industry in the UK has grown rapidly. Clients and advertising agencies are becoming more aware of the effects that can be achieved through CG, and this is a trend which looks set to continue into the future.

Clearly, the phenomenal success of multi-million pound film productions such as *Monsters, Inc.* and *Shrek* has aided the 3D animation company's cause.

These terrific animations have propelled our field to the forefront of consumers' minds and reinforced its reputation for pushing through the barriers to produce innovative and outstanding results.

Yet they've also perpetuated a major myth when it comes to 3D animation – that it's prohibitively expensive.

However, a recent industry survey conducted

numerous ships and planes and recreating those live-action scenarios for real.

3D animation's versatility also dispenses with additional expenses often incurred by live-action re-shoots. Alterations can be made throughout the creative process if the brief needs to change – or if an idea does not translate well in practice – with no increase in price.

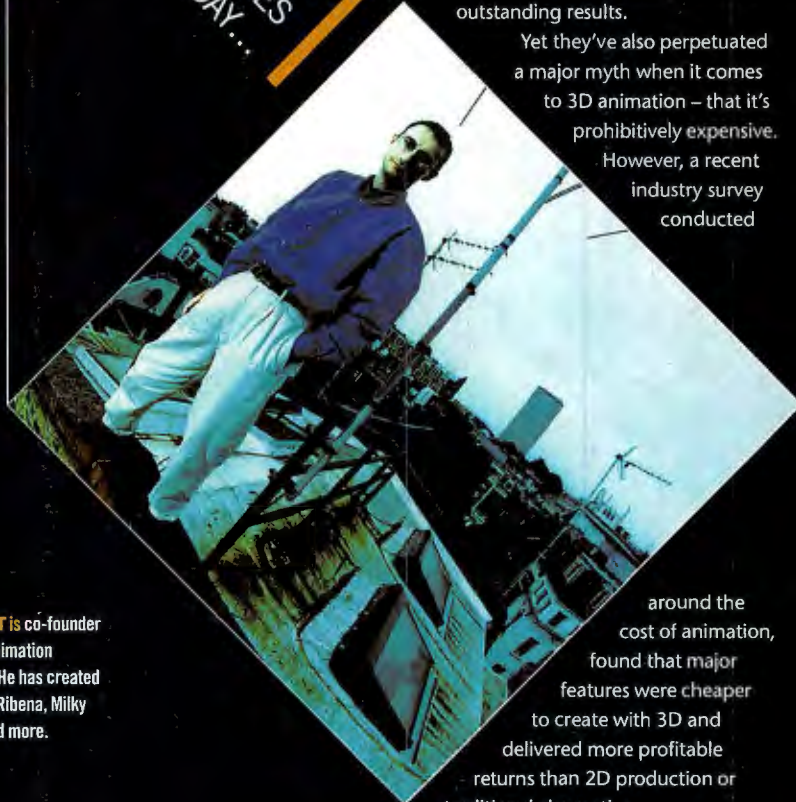
The ability to create scenarios or characters that would prove difficult, if not impossible, in real life also adds to the appeal of 3D animation. Furthermore, clients are becoming increasingly aware of the effects that can be achieved through 3D, and more demanding as a result. This would not have happened a few years ago.

Take for example the SeaFrance *Rodin* commercial. This proved to be one of HR3d's most challenging and rewarding projects of recent months, and was particularly satisfying for one major reason: HR3d was able to persuade the client, which had previously only used live action in its commercials, that the grand scale of the gradually assembling ship – and the authentic waves surrounding it – could be achieved using computer animation.

SeaFrance was delighted with the results, and HR3d successfully allayed all its client's fears that the vessel wouldn't look sufficiently realistic. The commercial shows the SeaFrance's new flagship ferry forming section by section in a computer-generated sea, a concept which reinforced the strength, resilience and newness of the ship. The company was also thrilled to learn that the animation was, compared with the former live-action commercials, surprisingly cost efficient.

If the misconception that all animation is costly continues, advertising agencies and production companies alike may, when writing a brief, dismiss the discipline before it's even considered. The current reality is that they tend not to write for animation, confining ideas to the real world and consequently limiting possibilities.

However, a few recent advertising campaigns have proved that with a full understanding of its potential, animation is a powerful tool that can help advertising agencies and production companies fulfil the client's brief as creatively as possible – without breaking the bank.



around the cost of animation, found that major features were cheaper to create with 3D and delivered more profitable returns than 2D production or traditional claymation.

In most cases, animation isn't as expensive as live action, particularly where 3D is concerned. Take last year's box office smash *Pearl Harbour*, for example. Computer-generating the colossal and gripping battle scenes proved far less costly than building the set,

ALAN BASSETT is co-founder and director of animation company HR3d. He has created commercials for Ribena, Milky Way, Kellogg's and more.



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RIGHT Science fiction sequences nearly always call for CG creativity these days, and things are no different for CHD. This shot is from a series called *Thunderpilots*, written by Murti Schofield. The programme is currently at the proposal stage.



COSGROVE HALL DIGITAL

New success from old with CGI

After 25 years of animation, the UK's own House of Mouse is combining traditional animation with CG to re-invent itself and its star characters... **BY GARRICK WEBSTER**

The old *Dangermouse* is far from being dead. Nor forgotten. In fact, he still regularly appears in his classic 2D form on satellite and cable programmes. And he's always mentioned when those conversations about childhood TV favourites break out among twenty-somethings in the pub. So why is Cosgrove Hall Films hoping to give one of its favourite sons a third dimension he's never needed before?

The answer's simple; after 25 years creating animation for television, the company is as hungry as ever in its pursuit of excellence and success. Having established a new division in 2000 – Cosgrove Hall Digital (CHD) – it now has the facilities, talent and technology to rework its old characters. While that

twenty-something audience may still appreciate classic *Dangermouse*, 3D offers Cosgrove Hall the opportunity to bring the diminutive hero to a new and younger audience.

Ben Turner, now Creative Director at Cosgrove Hall, first began working for the company on episodes of the original *Dangermouse* in 1979, and is part of the team hoping to relaunch the character in 3D. "It just seems the natural thing to do, to update the characters and stories – make them three-dimensional – but still maintain the cartoon quality," he explains.

CHD has been working on budgets and schedules, and negotiating with Fremantle Media, the owner of the *Dangermouse* character. If all goes to plan, *Dangermouse* will be returning as a 3D character, starring in a feature film, and appearing in a computer game. "There's still quite a few people from the original team that we can call upon, from the animators, the art teams, myself as a designer and art director, right the way through to, hopefully, David Jason," continues Ben. "We can't get Terry Scott because, sadly, he died a few years back, but we'll get somebody to try and fill his shoes on the Penfold character."



BELOW The Wobbly Horse is a new character created by CHD for a proposed pre-school TV series. These shots show the toy-inspired horse walking across a panoramic environment.

BELOW *Albie* will be aired this year. Although the style is based on a traditional hand-drawn look, many animal characters in the series rely on CG for their textures.



RIGHT Blog is a new character. Creative Director Ben Turner put together the concepts and looks for this strange and comical 'duvet' creature.



"THE DIGITAL 3D *DANGERMOUSE* WILL BE AUTHENTIC. MUCH OF THE ORIGINAL TEAM IS WORKING TO UPDATE THE CHARACTER AND STORIES FOR A NEW GENERATION"

"It will be authentic," emphasises the Creative Director. "It's the original team, but updating that character and stories into a 21st century version of *Dangermouse*, for a whole new generation. We've got various European options on funding for a feature, too."

THUNDERBIRDS ARE GO!

Dangermouse isn't the only British institution that CHD hopes to revitalise for a new generation. Only recently, the team was called upon to recreate a CG Captain Scarlet for *Thunderbirds* creator Gerry Anderson, who is hoping to revive the good Captain in a totally new CG project. CHD helped create a trailer which will help Anderson tout for backing.

The CG Captain Scarlet was created at Cosgrove Hall using a SensAble Technology sculpting arm. CHD has worked closely with SensAble to make the device more useable in the CG studio. "In the past, when people made anything on a sculpting arm, the information that came from it was so complex you couldn't use it," says Jon Rashid, CG Manager at CHD. "But we've worked with them now, and I can take a mesh from a sculpting arm and animate with it straight away."

FACTFILE

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CREDITS *Engie Benji, Bull and Ben, Fetch the Vet, Albie, The Inbreds, Kindersticks* music video, *Trojan Horse, Wobbly Horse*

Jon continues: "We use McKinnon and Saunders, who are world-renowned sculptors – they worked on *Mars Attacks* and other similar projects. We had their best sculptor come into the department and play with the sculpting arm for a couple of hours, and then he modelled Captain Scarlet's head which the motion picture company used for the CGI *Captain Scarlet* trailer."

The work with SensAble's 3D sculpting device is just one demonstration of CHD's in-house innovation. In building the CG department, Jon Rashid has chosen to work with *3ds max* and *combustion*, but for the applications to fit into Cosgrove Hall's creative environment, the company has had to write its own add-ons. One such innovation is digital storyboarding. According to Rashid, a traditional, drawn storyboard can cost up to £2,000 per show, and is used just once. However, using the new system, the animators can turn each storyboard into a living representation of the production throughout the process. When animations are done, they replace scenes in the storyboard, and the directors can see what stage things are at simply by clicking on an item.



ABOVE Dangermouse – could he be the quintessential British cartoon character? Cosgrove Hall was behind the original mouse, and CHD is working on bringing him to the big screen for the first time, in 3D.

CENTRE IMAGES For the series *Fetch the Vet*, journeys between set locations are linked with trips through CG environments. These environments are modelled and rendered by CHD using *3ds max*.



Another important area for Rashid is camera matching. CHD has developed its own software to work with its 3D and compositing tools. As Cosgrove Hall does a great deal of stop-motion animation using miniature sets, its camera-matching plug-ins have to be that much more sensitive. "It's a weird one, because on the camera-match software we have to be far more accurate than other producers because of the scale of our sets. If a camera moves a quarter of a millimetre, it tends to be a few feet on screen," he says.

TRADITIONAL STRENGTHS

Despite the impressive technical innovation on show, Cosgrove Hall intends to stay rigorously faithful to its traditional animation roots. When Jon Rashid joined from the games industry to help establish CHD, his strategy was not to fill the new division with technicians, but rather to retrain existing animators and give them new digital tools.

"That was one of the main reasons we opted to go over to *3ds max*," he says. "It's one of the easiest packages for the inexperienced CG animator to pick up. We generally find that it takes about two weeks before we can take a puppet animator and have them up and running on a computer. All our animators have a traditional background, so they might only have two or three years' experience on the computer, but invariably they've got ten or twelve years' animation experience. On the animators' side, they're almost all traditional animators."

This approach is carried through to many of the productions CHD works on, which often combine traditional stop-motion or hand-drawn work with CG elements. In fact, nearly every traditional production Cosgrove Hall works on has digital elements added to it. In its new series *Engie Benjy*, which goes out on ITV this year, stop-motion action is interspersed with CGI. When characters take a journey between sets, for instance, CGI is used to create the countrysides and backgrounds. Often, flying elements are taken completely into CGI to avoid the hassle of using strings and so on.

ADVERTISING

CHD RECENTLY COMPLETED ONE 60-SECOND and three 30-second commercials for the insurance company Hughes. Although the ads are CG, they've been created with a claymation look, and show a range of caricatures set in a variety of domestic settings – in the garden, shopping, on holiday and so forth.

"What we wanted to do was make it low-tech, rather than a slick thing," says Creative Director Ben Turner. "We actually deliberately brought the marker down a bit to give it that quirkiness that you get in claymation."

This year Turner aims to start working on a viral marketing exercise. Characters will be developed to market CHD itself and to flag up to potential clients the fact that the company can be called upon for a variety of different types of project. It's also hoped the campaign will prove a cheap way of testing the popularity of new characters, using the Internet.



INSPIRATION

JON RASHID (CG MANAGER) and Ben Turner (Creative Director) both cite Passion Pictures as a company they respect. As far as overseas talent goes, Jon recommends Bonk Pictures. "They did a thing called *Los Gringos*, which is a spoof John Wayne character versus a samurai warrior." See it at www.michaelgiacchino.com/losgringos.html. Meanwhile, Ben looks to the big American CG houses. "You live in admiration of the likes of Pixar," he says. "Here, coming from the television side of things, it's just really good storytelling. Why does something like *Toy Story* or *Shrek* succeed? Why are they so great? It's script, script, script, really. Obviously, they look fantastic, but if the script, the acting and the direction were lacking in any way such films could easily fall flat. The key to their success is the absolute pursuit of excellence at the script level, and getting the right cast, the right actors and a really good director. There's not a computer in sight for that. It's the creativity at pencils and paper level that's really important."



"WE'RE TRYING TO APPROACH CGI SIDEWAYS-ON, SO THAT WE RETAIN FORMS, COLOURS, TEXTURES AND METHODS OF MOVEMENT THAT ARE DERIVED FROM THE REAL WORLD"

For another series, the 26-episode *Albie*, the main character is drawn, but all the animals are CG. "The reason for it was because the animals are drawn with cross-hatching," explains Jon Rashid. "There's no economical way for it to be drawn by a traditional artist because the cross-hatching has to be consistent; it's that busy. We can put it on as a texture on a 3D animal and the hatching stays static no matter what the animal does. They came to us with that one first and it was so successful that the animals have now become quite a large part of the show."

MIX AND MATCH

It's this mixture of real, physically created characters and props with virtual settings that Ben Turner seems to relish. Typically, his team will work from drawings, paintings and other real-world elements from the start. This must be carried through to the finished animation so that the CG and real-world elements look as one, in an organic, believable environment.

"We're trying to approach it sideways-on, so that we retain forms, colours, textures and methods of movement that are

ABOVE This set of images is from *Engie Benjy*, the new show by CHD. *3ds max* and *Photoshop* are used together to create panning backdrops and skies. On the right is a *3ds max* version of the studio set used for the series.

derived from the real world rather than the purely virtual world," he says. "I know it sounds odd, but I think that's the way to do it. The art direction, the visualising that you begin with, if you can give a clear direction on that then it leads the CGI experts towards specific techniques. They know exactly what they're aiming for."

And because the company is so busy – it can have as many as 11 projects on the go at any one time – Turner has the opportunity to keep creative teams fresh. When a big project is complete, artists can find themselves doing a TV commercial, just for a change of pace. But CHD's plans stretch well beyond advertising, too. In addition to the possibility of the CG *Dangermouse* movie, the company hopes to venture into Web animation, viral marketing, game art animation, music video production and a whole range of related fields. It seems it's not just *Dangermouse* who's being digitally re-invented with the founding of CHD – it's the whole Cosgrove Hall empire. It's no wonder the company looks upon CHD as central to its strategy for the next 25 years.



new features tour

The long-awaited *Softimage|XSI* version 2.0 is here, with a raft of new features. And even the simplest additions can shave hours from your workflow. But what are they and how do you use them? Step this way...

BY ROB MOODIE

The year 2001 saw the aggressive development of *Softimage|XSI* and one of the busiest Softimage stands ever at Siggraph – but what was everyone waiting to see? *Softimage|XSI* version 2.0. The latest version of the non-linear animation system shipped at the end of December and is the one that the industry has its eyes on. This seems to be due to a number of factors – the integrated compositor, the hair and fur tools, the latest version of *mental ray*, plus the open architecture that *XSI* offers... the list is endless.

So if you had version 2.0 delivered to you recently or you're pondering whether to buy it, here are some cool tips and tricks to get you through the package. This article can in no way cover *all* the new features in this monumental release – this is only the icing on the cake, so check out www.softimage.com or www.tyrell.co.uk for more details.

Due to time constraints the images in this tutorial aren't on the cover CD.
You can download them from our Website at www.3dworldmag.com

PICTURES COURTESY OF: Softimage Co. and Avid Technology Inc.

SOFTIMAGE XSI 2



Useful new features

DISPLAY OPTIONS

Viewing and navigating your work can be a headache in 3D. Here are a few tips for using display modes in *XSI* to speed up this process.

Hidden Line view is a very useful option for general work. It will remove any backfacing or 'hidden' lines, significantly cleaning up the view. Objects are solid shaded. If you really want to get the most out of this view, go to Display Options (found on the top right of any viewport title bar) and change the hidden line mode to 'Object diffuse color'. Depth Cue is now available in the viewport, enabling you to fade objects based on their depth (that is, distance from the camera). There are three settings, giving you a choice of object, scene or your own custom settings. There are also new display modes for particles, enabling you to see sprites and transparency.

MODELLING

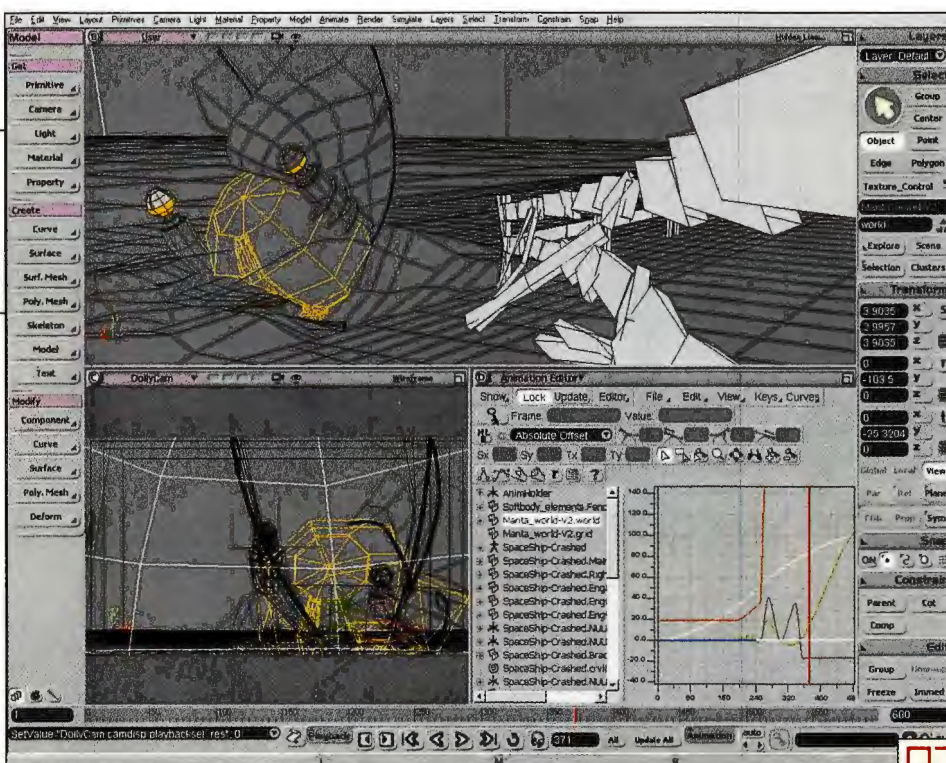
XSI has always had the most powerful non-modal modelling architecture. An amazing feature has been added to this – the ability to mute operators in the construction history. If you have a dense, complex construction history, ordinarily you will have to freeze the history at different points and save a model with different stages of construction –



a process known as 'layering'. Well, this has all changed in *XSI* v2.0. It is now possible to non-destructively mute operators from any point in the construction history and preview your model with or without the operations applied. This means that

you can check your work without the headaches of version histories and all that these bring. Simply right-click on the operator node in the construction history to mute.

XSI 2.0 has a new Weld Points function – this is a real treat to use. Press M on the keyboard to access the Move Point tool and hold Alt. Notice as you drag points onto other points they are automatically welded. No operators, functions or menus to



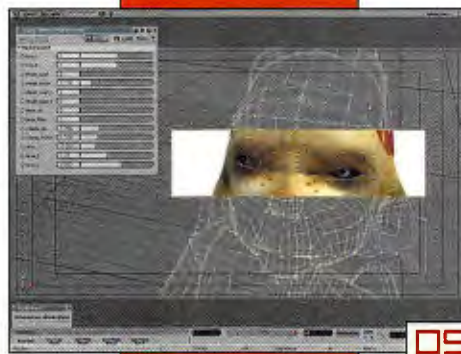
navigate – just drag and drop!

Proportional Modelling has been improved; like everything else it has become even more interactive. Proportional modelling can be accessed from two places, from Modify>Component>Proportional or from the MCP 'Prop' button. Also, if you right-click this button it will take you straight into the proportional setup.

In version 2.0, if you are moving points using the M key and proportional is selected, you will see a circle showing the proportional area; pressing the R key enables you to modify this interactively. Also points covered by the proportional radius now display in colour to show they are affected, which is a useful addition.



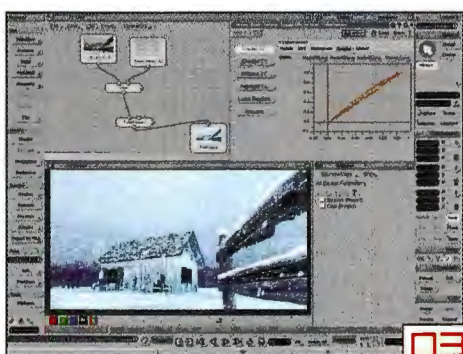
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DEFORMATIONS

New to Softimage|XSI v2.0 are two new deformer types: Volume Deform and Deform by Cage. Both of these types offer a tremendous amount of flexibility, and are very quick and easy to set up.

The volume deformer consists of a spherical control object, which affects all the points contained within the volume of the sphere and any fall-off settings or profile curve you may choose. To find this go to Get>Primitive>Control Object>Volume Deform.

04 XSI was one of the first packages to sport non-linear animation and version 2.0's animation editor improves on this.

02 Set up sliders to control common facial controls and use the graph display to fine-tune action.

03 Version 2.0 adds a fully-fledged compositor, which enables you to render directly into a layered view.

04 The compositor works with a simple node display, so you can just drag and drop layers and see the results instantly.

05 Using sliders for intricate animation, such as facial expressions, makes the tweaking of subtleties much simpler.

06 Like most other objects the Render Tree is just that: a linked collection of nodes which you can drag about to alter a material's composition.

07 Put together a lot of XSI 2's new features and you may get something like *Manta*, Softimage's own demo film made last year.



07

TRANSFORMS AND SELECTIONS

This is one of those features that doesn't seem like much until you start using it. Basically you can set a property on any object that, when selected, will automatically take you to the transform tool, axis and mode that you specify. So, for an arm of a character you specify that bone1, the bicep, is automatically changed to rotation in Z local when selected. Repeat this process so the effector defaults to translation in X,Y,Z in Global mode. This will save a lot of time and ensure that keys are added always in the



XSI HAS ALWAYS HAD THE MOST POWERFUL NON-MODAL MODELLING ARCHITECTURE

If you ensure the object you want to deform is selected, the deformer will automatically be associated to it. What gives this tool's level of flexibility is the fact that the control object can be associated and disassociated from the deformed object at will (Shift+V). This means that any scaling, rotation or translation can be done quickly, enabling you to sculpt objects using only the control sphere.

Deform by Cage is whatever you want it to be. In a nutshell, any piece of polygonal geometry can now be used in the same way as a lattice. This is wonderfully powerful when coupled with the Extract from Polygon tool. Imagine you have a polygonal mesh. You select some polygons and use Create>Polymesh>Extract from Polygons. This creates a new discrete object, which, if you apply Deform by Cage, enables you to use a copy of your original mesh (or just part of it) to deform like a lattice.

right mode and axis. One thing worth mentioning about this tool is that it is only accessed via supra keys. While we're on the subject of transforms, check out the new Match Transforms function. Select the object you wish to transform and go MCP>Transform>Match Transform. Notice that the cursor has changed to prompt you to pick the reference. Et voila!

Hierarchies and clusters are always used in XSI. To select each of the elements within either, simply branch-select the root of a hierarchy, or for a cluster just select, and then go Select>Select Members/Components. Marking parameters for animating has been improved by the addition of branch selection and also marking sets. These are very cool – you mark all the parameters on an object's hierarchy to animate, then go Animation>Create Marking Set. You can then set keys on this entire set. Bear in mind that you can only create one set per object.

Hair

Like everything in *XSI*, hair is completely integrated. Let me repeat that, completely integrated. This is no post-process addition, hair is affected by everything in your scene including lighting, dynamics, environmental forces, obstacle collision – everything. And if that wasn't enough this can all be seen in real-time in the interface.

Hair in *XSI* is a collection of objects that work together: the emitter object, the hair object, the hair generator, the dynamics engine and the hair shader. Most of the parameters for hair are mappable and this includes weight maps, texture maps and UV properties. The hair in *XSI* is true geometry; that is, a segmented curve that behaves in the same way as an IK chain. This means that hair can be styled either by individual strands or collections of hundreds. Even points can be tagged on the hair strands and manipulated individually.

Creating hair is a very straightforward process in *XSI*. You start by defining the area of an object that should emit hair, such as selecting polygons on a head, and then choose Create>Hair>From Selection. As soon as you choose this command the guide hairs appear, emitting along the polygon normals. The render hairs are the in-between hairs of the guide hairs and they are generated and interpolated from them. You may choose to display just the guide, or render hairs, or both. If you choose to display render hairs you may also choose a percentage to display. Again,

**LIKE EVERYTHING IN
XSI, HAIR IS
COMPLETELY
INTEGRATED – IT'S
NOT A POST-PROCESS**

the hair object's construction history. This means that like modelling operations you may edit at any point and also use the mute function on particular operations, although to help see the results and subsequent styling progressively it's prudent to freeze the operators. It's very important to note that

if you have applied dynamics to the hair object you cannot style the hair unless you mute the dynamics operator.

Clicking the 'Style' button at the bottom of the hair panel can do this. Because the hair is actual geometry, all of the

standard deformation tools work on the hair object.

One of the first things you will want to do with hair is adjust the length. There are a couple of different ways to do this; selecting either hair strands, tips or points and using the scale tools. Points on the hair strands are always equidistant so really only one point needs to be selected on the hair strand to scale the whole thing.



this you may either scale down the appropriate guide hairs to zero or create a density map for where hair should or should not appear.

PARTING, COMBING AND DYNAMICS

Combing is another critical step in creating the look you want (see, you should have listened to your mother...) The combing works on either the axes, the normals or away from the camera – this also works with the other viewports as well. This technique can be very useful when combined with the orbit command. Orbit the camera, comb away from the camera, orbit again and repeat for the complete windswept look. There is also a comb amount function that lets you specify a value between zero and one.

Partings are easily created by using Modify>Interp>Split. You may also pull individual strands and 'comb' directly. As well as combing and length tools there is a myriad of other ways to style hair such as clumping, pouffing, straightening, frizz and kink parameters. Also, the guide hairs can be separated or merged to create individual groups. With this amount of tools at your disposal, there should be no shortage of beautifully-coiffed creations heading your way soon.

Dynamics are the next logical step for your hairy creations. Applying dynamics enables the hair to be affected by the velocity of any movement of the

OTHER WAYS TO STYLE HAIR INCLUDE CLUMPING, POUFFING, STRAIGHTENING, FRIZZ AND KINK PARAMETERS

this is the kind of flexibility you will find within hair simulation in *XSI*, so get used to it!

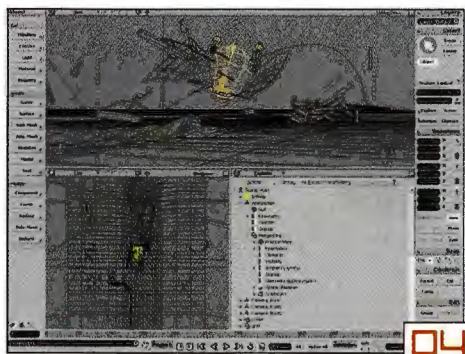
BOUFFANT OR MOHICAN?

Once the hair is attached to the emitting object it's time to begin styling. It's worth noting here the different selection methods; you can select individual hair strands – even just by the root, hair tips and any number of points along each strand. All styling is done only on the guide hairs, and you can use the combing and styling tools within the hair panel or any of the standard scale, rotate or translate tools.

When any styling is done an operator is added to

Attenuation is another way to scale hair length. This is particularly useful because it scales hair according to the size of the corresponding polygon from which it is emitted; the smaller the polygon, the smaller the guide hair. Hair can also be cut just as you would in the real world. Select points along the hair length and simply click Cut. No segments are actually cut from the guide hairs when this is done – they are re-fitted to the new length. So, unlike the real world you can increase hair length that was cut too short!

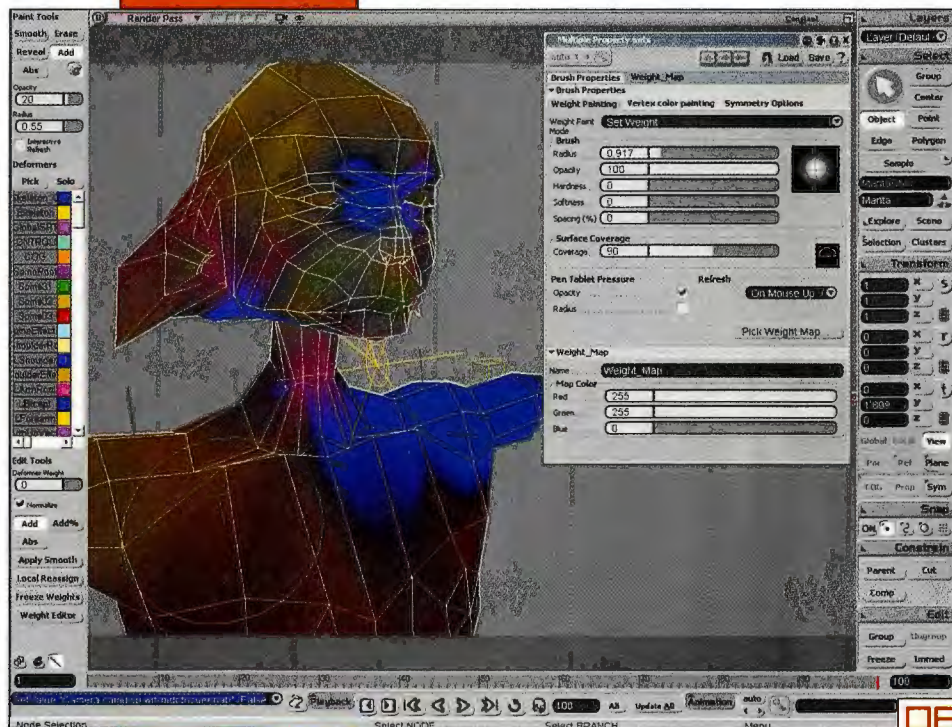
There may be times when you will want to create bald patches such as shaved patterns in hair or mown stripes in grass, for example. To do



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emitter object, such as long hair swaying in a walk cycle. They also allow for the influence of natural forces like gravity and wind, as well as collisions with other objects. Select the hair and go Create>Dynamics. This adds the dynamics operator to the hair object's stack and the dynamics operator property page appears.

It is important at this point to understand simulation caching and how it works. If you cache the simulation to a file you will be able to jump to any frame and get an update. The default is set to 'Live' which means that no caching occurs, so any changes you make to hair parameters will update constantly. If you set the cache mode to Read & Write and make a change the cache is cleaned; however, no recomputation takes place until you change frames.

WIGGING OUT

Obstacles and collisions can be set using spheres within the hair emitter object; for instance, with long hair on a human head the neck and shoulders will need to be defined as obstacles. This also works for effects such as a ball rolling through long grass. It is advisable to use polygonal geometry for obstacles; the collision detection is more accurate because the points sit directly on the polygons' surface, unlike NURBS. Natural forces such as wind and gravity can also be applied at this point in the same way as they are applied for all XSI simulations.

There are two ways to render hair in XSI – either as volume or geometry. Volume is the default and works like this: the hair's bounding box is passed to mental ray and volumetric calculations take place which determine if a ray intersects with a strand. This is reasonably quick but limits you to the Hair Renderer shader.

01 One new facility in version 2.0 is the pixel shader function, for even greater control over surface appearance.

02 The new Synoptic View is particularly useful for character animation.

03 3D text generation is fully built-in, with features such as the ability to run text along a curve with the minimum of hassle.

04 Manta, Softimage's latest animation, was developed primarily to show off version 2.0's new features.

05 The Texture Editor includes interactive mapping capabilities.

06 Vertex painting is fully supported with a variety of brush parameters.

THERE MAY BE TIMES WHEN YOU WANT TO CREATE BALD PATCHES, SUCH AS SHAVED PATTERNS IN HAIR OR MOWN STRIPES IN GRASS

Using the Geometry method, the same algorithm that is used for all XSI shaders is employed. Hair is triangulated before being passed to the renderer. This obviously has a bigger computational overhead than Volume, but the advantage is that any XSI shader can be used. We recommend having a look in the Netview for hair presets to see how these results were achieved.

No doubt about it, the hair in XSI is incredibly good. The interaction and editable nature of all parameters will satisfy even the most demanding of TDs, yet also animators who would not consider themselves adept at what is typically such a complex field should find they are able to achieve results quickly.

In all, XSI 2.0 is a major upgrade, and certainly delivers everything it promised. There's a wealth of new features in there of which we've only scratched the surface, so get in and have a play – it's the best way to learn!




Rob Moodie is a product specialist in 3D animation with Tyrell, a team of industry specialists dedicated to the supply of production technology to creative markets. He can usually be found demoing Softimage XSI at various shows in far-flung corners of the world. For more information on Tyrell and its services, see www.tyrell.co.uk

FAR RIGHT A combination of digital and miniature set extensions, matte painting and finely-tuned colour grading help transform New Zealand into Tolkien's Middle-earth.

THE LORD OF THE RINGS

As the first instalment of Peter Jackson's take on the Tolkien trilogy hits cinemas worldwide, visual effects supervisor Jim Rygiel discusses the CG magic at work in Middle-earth **BY MARK RAMSHAW**

 ver 100 million copies of JRR Tolkien's critically divisive epic *The Lord Of The Rings* have been sold since the first instalment in the trilogy, *The Fellowship Of The Ring*, was published back in 1954. Regularly rated as the best-loved book of the 20th century, it has now, some 50 years on, been translated to the big screen by auteur Peter Jackson, the diminutive yet highly regarded Kiwi director whose resumé delightfully veers from culty, low-budget splattershock horror-comedies (*Brain Dead* and *Bad Taste*) to critically respected drama like *Heavenly Creatures* and the curious indie-Hollywood hybrid *The Frighteners*.

But it's been a long time coming. In fact, JRR Tolkien, author of *The Lord Of The Rings*, was approached by Hollywood decades ago with a view to turning the trilogy into a live-action film. Baulking at the crucial plot and character changes the studios had in mind – not to mention the complete lack of respect for the material – Tolkien angrily sent the movie industry packing. Even when a *Lord Of The Rings* movie did finally appear in 1978, masterminded by errant inker Ralph Bakshi of *Fritz The Cat* fame, it was as an ambitious if poorly adapted, animated affair, mauled by critics and book fans alike for inconsistencies as well as incompleteness.

Little wonder, then, that a live-action version was considered out of the question. Until director Peter Jackson took up the cause. Initially, it looked as though Miramax would provide funding for the colossal project, but it was only when New Line stepped in that the movies got the green light. In fact, it was the studio that suggested making three movies, rather than the two Jackson had originally envisaged (Miramax originally wanted just one). That Jackson and his team successfully masterminded this colossal operation – while sticking to a reasonable budget – is nothing short of miraculous. By

ABBREVIATED CREDITS

Heavenly Creatures (1994), *The Frighteners* (1996), *Contact* (1997), *The Lord Of The Rings: The Fellowship Of The Ring* (2001)

BRIEF HISTORY

"The studio was formed to accomplish a few

digital effects for *Heavenly Creatures*, and then the first significant expansion happened in 1995-1996, when it grew from around seven artists to approximately 35, to finish 492 shots for *The Frighteners*," says Jon Labrie, Chief Technical Officer at Weta Digital. "We began

shooting all three movies concurrently, and keeping the entire production within arm's reach of the director's native New Zealand, the laid-back Kiwi will ultimately deliver the entire trilogy for just \$270 million – a mere snip in Tinseltown terms at \$90 million per flick.

Aside from the stratospheric fiscal figures, the production stats are equally mindboggling. The main live-action production schedule was spread out over 15 months, and wrapped in December 2000 (during which time the actors bonded so much, cast members playing members of the Fellowship even got identical Elvish tattoos). In total, the project required the construction of over 350 sets and used 4.5 million feet of film – the first instalment, *The Fellowship Of The Ring*, opening on an unprecedented 10,000 screens worldwide last December. The quantity and complexity of the work handed to Jackson's Weta Workshop studios and the Weta Digital division beggars belief. The former was responsible for all prosthetic, prop, set and miniature work; the latter almost all effects and post-production duties.

SOUTH CENTRAL

Visual effects supervisor on all three films is Jim Rygiel, an industry veteran with one hell of a CV. He first came to prominence as VFX Supervisor on *The Last Starfighter* in 1984, and has since worked on such high profile flicks as *2010*, *Ghost*, *Alien³*, *Batman Returns*, *Species*, *Multiplicity*, and *Star Trek: Insurrection*. Most recently, he worked at Shepperton Studios on *102 Dalmations*.

"I have a family so it's kind of hard moving around," says Jim. "But with this project I'm going to be on it for two whole years, so they've moved over to New Zealand, too."

By the end of those two years, Jim and the Weta Digital team will have completed some 1,600 effects shots, with 570 used in *The Fellowship Of The Ring* alone. "We have shots that are full CG, ones with CG and miniatures to composite, and of course a whole load making the actors who play the role of the hobbits appear a lot smaller."

While Weta Digital has worked on many of Jackson's most recent movies, gearing the home-grown operation up to handle a project of this magnitude has been something of a challenge. In the space of 12 months, the number of artists and animators has rocketed from around 90 to almost 200. "We've basically had to get them from the UK, France and all over the world," says Jim.

The computing power has increased at an even more astonishing rate. A year back, the studio had a rack of 32

R&D on a remake of *King Kong* in late '96, but the plug was pulled in mid-'97. Latish '97 found us, around 29-strong, doing 48 shots for *Contact*. Then it was early '98 when *The Lord Of The Rings* rights were sorted and we began the R&D in earnest. We thought we might grow to

as many as 80 artists during the project. In fact, at the film one peak, which was approximately three weeks before final delivery in mid-October, we had 164 digital artists on the job. That number has fallen back to around 150 as we gear up for film two."



TOP GRADES

Although New Zealand's rich landscape provided an ideal starting point for representing Middle-earth, countless set extensions and heavy grading were required to complete the illusion.

"About 80 per cent of the movie is digitally graded," explains Jim. For this a

whole new facility, The Post House, was built, and custom grading software specially developed for Weta by a team in Eastern Europe.

"It's an amazing piece of colour correction software. It works like a telecine timer. As the film goes by, you

can lay down colours on the fly, and then go back later to fine-tune selected areas such as face tones. Using this software, the entire movie was roughly graded within a couple of weeks.

"What's really cool is the way it blends the live-action and CG elements so well.

Peter wanted an almost-storybook look to the films, but one that's quite subdued. It's very much based on the watercolour pictures of Alan Lee and John Howe [two of the most famous Tolkien illustrators, and both consultants on the project]."



CENTRE TOP While the *Massive* system is capable of generating some amazing battle scenes, there's no substitute for live action, so footage is shot of the fighters nearest to the camera.

CENTRE BOTTOM The *Massive* system at work, with the forces of good and evil facing off for a spectacular battle. Notice how the orcs eschew ordered ranks, the powerful *Massive* system endowing them with more aggressive, unpredictable behaviour patterns.

ABOVE Here's the final scene, with all elements comped and graded. Impressive – but just wait until you see it in action.

FAR RIGHT Already blessed with a complex bone and muscle structure beneath its skin, the mole-like Moria cave

troll is further enhanced with a bump map and some extensive model deformation to lend a scale-like effect. The two are

then combined and the rock-like texture added. Above you can see how the cave troll appears in the final scene,

complete with computer-generated cave ceiling and various atmospheric effects. For tracking in this and other

scenes, Weta Digital used *3D Equaliser*, *Shake* and *inferno*.

processors. Now the artists have access to almost 400, with a farm of another 400 also on hand. This is expected to rise by at least another 400 for the even more complex effects work demanded by the next instalment, *The Two Towers*. There are also 20 terabytes of disc space available to artists, with an additional 20 of offline storage also on hand.

"On most movies you can easily categorise your shots. On *102 Dalmations*, for example, you'd have a list of something like ten shots featuring digital dogs, 300 with spot removals, and then some green screen. But on these movies you have everything going on in every shot. You're always mixing and matching, with scale doubles, digital doubles, miniatures, matte paintings, blue-screen, and every type of CG effect in the book. There are sequences that are almost completely done using miniatures, and others of pure CG. We've got one with a chamber of infinite pillars generated in CG, with the scene also populated purely by CG people. That's a really cool, amazing sequence."

"I must admit I was a little worried when I first came here, wondering how they were going to do all that was needed," he reveals. "New Zealand isn't the CG capital of the

world. But there was such good planning in pre-production, and everyone and everything pulled together so well. And Peter [Jackson] has such a good understanding of how it all works. He comes from a VFX background, and so knows what he wants and how to get it. He kept everybody focused, with a can-do attitude that all of New Zealand seems to have."

In fact, the way Jackson keeps the entire production based in New Zealand has proven highly beneficial for all concerned, not only enabling the director to remain actively involved with all aspects of production on a day-to-day basis, but also making it possible to steer the crew as and when script and shooting changes were required.

"Normally, we'd be considered post-production, but Peter wanted us to be an extension of the production process, so you go with the flow as shots change. It was a breathable thing. And because the company is pretty much self-contained, it's possible to add another shot even when there are something like two weeks left in the schedule. If you did it in Los Angeles, they say, 'Yeah, but it'll cost a million dollars'. But Peter can do it here himself. And he's doing it to make a better film, not to make our lives miserable. It's a really



CREATURE FEATURE

In addition to the digital doubles used to represent key characters in a number of scenes, and the CG armies generated on the *Massive* system, *The Fellowship Of The Ring* also features a small number of creatures that exist only as 3D models. These include the cave troll, a terrifying creature that attacks the Fellowship in the Mines Of Moria.

Like all the models created for the film, the cave troll is a NURBS-based creation (for the next movie, Weta Digital is currently toying with the idea of switching to sub-division surfaces instead). And like the Balrog and Gollum (due to appear more clearly in *The Two Towers*), it boasts a fully working bone, muscle and skin system.

"Getting that to work has been quite difficult," admits Jim Rygiel candidly. "Obviously, we've used human physiology as a starting point, but for something like the cave troll we really needed a unique bone structure so that it wouldn't end up looking too human. We decided that there was no other way to get the creatures looking convincing. You just can't fake the way bones and muscle react and interact, or the way the skin slides over the muscle system. You could

just about animate all the elements by hand, but that's not really where you want to spend all your energies."

The battle sequence featuring the cave troll is notable for its kinetic camerawork. The constant movement, dynamic viewpoints and accurate tracking all help to build up a superb level of tension, and to complete the illusion that the troll really is in the room alongside the human actors.

"Typically when you have a lot of CG animation, the camera seems to stop, because you really don't want to have to worry about a lot of camera tracking," says Jim. "But rather than have an action scene and then a lock-off shot of the cave troll running at the camera, we have the camera constantly moving with a hand-held, flying-around-the-room feel. We had to work pretty hard to put it together."



interesting way to work. I certainly wasn't used to doing things this way."

It certainly helps that Jackson has such an active role in the New Zealand film industry. In addition to his own Wingnut Films production company and the Weta studios, there's also a full motion-capture facility, the Post House for film grading, and the director even works as part of a movie theatre restoration group.

"Actually, I think Peter must own all of New Zealand," laughs Jim. "He's a big part of the film industry here, helping keep it alive. And he has this strange way of getting people to do things. He's an amazing creature."

MASSIVE ATTACK

The world of Middle-earth depicted in *The Lord Of The Rings* has its fair share of strange sights and even stranger creatures, but easily the biggest task facing Jackson and his team has been the depiction of the epic battles so vividly described by Tolkien. While the largest conflicts are set to take place in the subsequent two movies, *The Fellowship Of The Ring* has its fair share of orc-splattering action. Although a large army of extras

(including a battalion of soldiers from the New Zealand army), around 250 horses, countless props and prosthetics play their part, the flesh and blood element only represents a fraction of the visual composite. To help create vast sprawling armies of up to 20,000 soldiers, Weta relied on its own proprietary software, *Massive*, developed at Weta by Steve Regelous. Although laborious to set up, with a call sheet to describe behaviours for every single soldier, it's an incredibly powerful system, mixing autonomy with the ability to direct individual units in much the same way as real actors on the field.

"You can have 10,000 orcs and 10,000 Gondorians going into battle, each one with its own 'brain'," enthuses Jim. "Each operates using any number of parameters, including ones that utilise vision simulation. That's what really sets it apart from any other crowd simulation system."

He likens the vision simulation to seeing with cataracts, with each unit able to identify colour, degrees of light and dark, and general shapes. Instruct an orc to hunt out anybody on the battlefield wearing golden armour, for instance, and he heads off automatically, acting upon his pre-programmed species and character behaviours, rather than simply following

FACTFILE

FORMED 1993

EMPLOYEES Currently 150
(see Brief history)

BASED Weta Digital,
Wellington, New Zealand

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terrain. "The intelligence is just one component of the program," adds Jim. "The characters have the smarts, but *Massive* is also used to make them look real. For this it uses a library of over 300 motion-captured cycles. There are around 20 run cycles, 20 walk cycles, 20 death cycles, 20 attack cycles and so on, which each character is able to smoothly switch between.

"And besides having the brains, *Massive* knows how to randomise, too, which gives the resultant mêlée a real air of unpredictability. You might have some combatants running to the edge of a cliff and making a turn, for example. But while some make the turn, others are bumped off along the way. At that point, they go into a fall cycle, switching from motion-captured animation, to a very freeform and dynamic inverse kinematics simulation. This enables

them to tumble realistically, hitting the rocks as they fall down the cliffside."

Massive is also able to resolve all the actual combat, with each soldier instinctively switching to one of its attack cycles when an enemy is within range.

"It's a little more intelligent than collision detection, and uses the vision system instead," explains Jim. "As an example, we did a test where a CG guy was put in a maze. All the walls were the same colour, but he could see if a wall was brighter or darker. So as he looked around, he could detect depth, and use this to find his way out. If he'd relied on collision detection he'd have just run up to the wall, hit it, turned around and then set off again."

For rendering, *Massive* ties in with another piece of custom software, dubbed *Grunt*. For a single frame featuring 10,000 soldiers Jim estimates *RenderMan* would take between ten and 30 hours to render. *Grunt* does it in 10-30 minutes.

"Unlike *RenderMan*, our renderer knows what each object type is, and so can quickly pull in the correct model data. It's

ON THE MOVE

Relying heavily on motion capture, Weta used its very own capture stage, based in Wellington, to help realise Jackson's vision. "Usually you're constrained to an area of about 10x10 feet," explains Jim Rygiel. "But here we have 20x60 feet with 20 cameras set up. It gives us the leeway to run around a lot, and really act scenes out."

The facility is based on Giant Studios' *Motion Reality* system. Giant has a background in biomechanics, and its Director of Research and Development

Matt Madden has been able to tailor the set-up specifically to Weta's requirements. These included sourcing data for digital doubles and to help drive the armies created on the *Massive* system, and the real-time transposing of human mo-cap data to the non-human skeletons of the various creatures. Additionally, motion capture was used extensively for pre-visualisation. The system enabled Peter Jackson to block scenes and place actors, creating camera moves via a virtual hand-

held prop. "It's a virtual reality sort of device," explains Jim. "The 'camera' is just a cardboard box with markers, which is used in conjunction with a pair of virtual reality goggles. Through the goggles, Peter was able to view the virtual set, and as he moved around, the system tracked the view. With the cave troll scene (see 'Creature Feature' boxout), the finished scene closely mimics the camera moves Peter created a couple of months before we began shooting the live-action scene."



"AS HE WALKS DOWN THE HALL, THE BALROG OOZES A CAPE OF BLACK SMOKE"

THE INCREDIBLE SHRINKING ACTORS

Blue-screen, boxes and forced perspective – just three of the tricks of the trade that helped Jackson make those hobbits look so small...

With the average hobbit measuring under four feet tall, and Peter Jackson keen to use actors of full stature to fill the roles of Frodo Baggins, Sam, Merry, Pippin and company, a diverse range of shrinking techniques had to be devised to accurately depict the halflings' diminutive dimensions.

"One of the biggest worries initially was the fear of having bad blue-screen composites, but in the end it wasn't a problem," says Jim Rygiel. In fact, the entire opening scene – in which Gandalf (Ian McKellen) enters Bag End, the hobbit hole home of Bilbo Baggins (an Holm) – was shot without the two actors ever standing in front of the camera together. It's impossible to spot in the finished movie.

"On moving shots, we also used a motion-control system, scaling the moves and lens for the hobbits," adds Jim. "Then you'd have the hobbit being dragged along

on a sled that's acting as a slave to the motion control, doing the inverse of the camera movement."

As well as reducing the size of actors using blue-screening and digital manipulation, the crew also called on a number of more physical and traditional techniques. At the simplest level, this involved placing other actors on boxes. Forced perspective also played its part, with the hobbit actors made to appear smaller in a shot by standing further away from the camera.

"We even had some scenes where you'd have a guy in oversized clothes, wearing big pants while walking on stilts, for example. It sounds as hokey as hell, but it works great. Peter always knew just when to use those sort of tricks. I must have watched one shot 50 times until I realised that's how he'd pulled it off!"

only designed for use in scenes involving *Massive*, though. In other cases we generally do use *RenderMan* for output."

FLAMING HELL

At the other end of the scale of digital effects are the handful of individual creatures encountered by Frodo Baggins and the Fellowship on their journey to Mount Doom. These include a cave troll in the Mines Of Moria (see boxout 'Creature Feature'), the ancient Watcher in the Water who guards the Moria gate, and the infamous Balrog. As described by Tolkien, the Balrog is a demonic entity standing some 40 feet high, wielding a whip and fiery sword. Other details, such as whether he actually has a set of huge, dark wings or whether Tolkien's description of them was metaphorical, has been the subject of debate for years.

"In the movie, he's definitely a demonic looking creature," reveals Jim. "But the cool part is the way that, as he walks down the hall, he oozes a cape of black smoke. And he also has a ten-foot mane of fire."

CG flame effects are notoriously artificial looking, so the use of completely rendered fire was dismissed fairly early on during the production schedule.

"CG fire usually has a soft look to it that you can spot straightaway. We wouldn't have been very happy with that, so it was either a matter of actually setting fire to something and compositing that onto our model or coming up with a better way. We actually did shoot tests using gas jets, sort of doing shadow puppets with real flame, but it never ever

looked close to being convincing. You just never got the right sense of scale."

Instead, the artists made use of *Maya's* particle system, but rather than rendering the fire as a pure particle effect, individual shots of real fire were added as sprites to each of the 50,000 particle elements. "It means each sprite is animated, and then so is the particle itself. The results look pretty incredible."

RING BACK

Six years since Peter Jackson first began work on the project, and *The Fellowship Of The Ring* is finally complete. But while the live-action footage for the whole trilogy was shot well over a year ago, Weta Digital must still work on the next two films for some time to come.

In fact, effects work started on the second movie, *The Two Towers*, some two months before *The Fellowship Of The Ring* was finished. Even so, this instalment isn't due to hit cinemas until the end of 2002 (with the final instalment, *The Return Of The King*, following in 2003). With even more epic battles for *Massive* to simulate, new locations to depict, and fully CG creatures such as Gollum and the Ents yet to see the light of day, Weta Digital's own journey through the lands of Middle-earth has only just begun...

FAR LEFT Disaster strikes in the Mines Of Moria, as the Fellowship contends with orcs, a cave troll, the Balrog, and the dangers of a collapsing stairway.

CENTRE Just one of many scenes that rely on a combination of live action, digital effects, and 1:72 scale miniature work.



The Lord Of The Rings: The Fellowship Of The Ring is at cinemas worldwide now. For more information, visit www.lordoftherings.net. *The Two Towers* and *Return Of The King* will be released in 2002 and 2003.



PART
TWODIRECTING
FOR
CGI TV

Casting and scripting

The idea's in place, but now you need the words, the voices and a team of talented creatives to make it happen. In part two of our tutorial, find out how the professionals get it done – and do it for yourself

BY DAVE OSBORNE

Directors often claim that pre-production is never long enough, because once you've started shooting, you have to live with those critical choices of voices, scripts and team for the duration. Which means visualising the project up front is one of the most important – and hardest – challenges you'll face during production.

VOCAL CONTRIBUTION

Casting voice talent for animation takes place initially at the pilot or promo stage, but you may find that after commissioning, this has to be revisited. Using well-known actors, comedians or personalities for lead characters is now normal practice, but while having a big domestic name attached to a project helps its profile, that appeal will only work in the home market. Once the programme is dubbed for foreign territories, the benefit is lost. And note that shows produced in the UK are often dubbed for the US market.

After securing any high-profile voices, you still need to cast secondary and bit-part characters. This is where choosing voice artists with a wide range can come in useful, because they can voice several characters instead of just one. Some actors specialise in voice-only work for radio and TV, so your first task is to listen to a few demo reels. If you have a test sample of animation to hand, try playing a potential voice alongside the moving pictures, even though the words and actions don't fit. This will help you see if the character and voice gel in terms of pitch and tone. To help make a decision, imagine your ideal well-known voice, then look around for a voice artist who most closely matches your ideal. Be

careful what you tell an actor at this stage, though, because if they get locked into something that doesn't work it can be difficult for them to find an alternative.

While assembling a team, it's also important to hear how all the voices play against each other, and you can only check this properly when you hold the first recording sessions. Flexibility and the option to recast is invaluable at this point. Ultimately, you have to produce a balanced team to cover all eventualities that fulfil both your creative requirements and the needs of the marketing and sales people who have to promote and sell the series.

"The voice has to sum up the character profile and be instantly believable," explains Sarah Greene, Producer on *The Cubees*. "Get the right voice and everybody's job is instantly easier."

SCRIPTING

Before starting production in full, it's preferable to have as many scripts in the bag as possible, because this enables you to see the development of the characters and whether the original premise is working. First, the scriptwriter pens what's called a story outline, which should contain the basic plot of the episode and give an idea of the characters and locations used. A scriptwriter might be asked to write a number of these before a final selection is made. Once a script is in development, the writer may need to produce up to three drafts, each time taking on comments from the producer and director.

While evaluating your script, consider these important factors: Are the characters consistent? Is the dialogue believable for that particular character? Has the scriptwriter created any animation

ABOVE *The Cubees* is a 3D CGI series aimed at pre-school kids. It's currently on GMTV in the UK and has been sold around the world. See www.cubees.com for more details.

2. Checkboard

The Cubeez meet on the checkboard, waving as they greet each other

CUBEEZ (various)
(Hello/Hi etc)

SFX – A SIGNAL – A BEEP/BELL ETC. It is coming from Tizzy's box.

BOZZ
What's that noise, Tizzy?

TIZZY
It's the post!

Tizzy flips her lid SFX TIZZY'S LID OPENS. She reaches in and pulls out A PARTY INVITATION – no text visible.

DOODY
What is it?

TIZZY
I don't know!

Tizzy reads the invitation

TIZZY
(reading) To the Cubeez.

DINK
That's us!

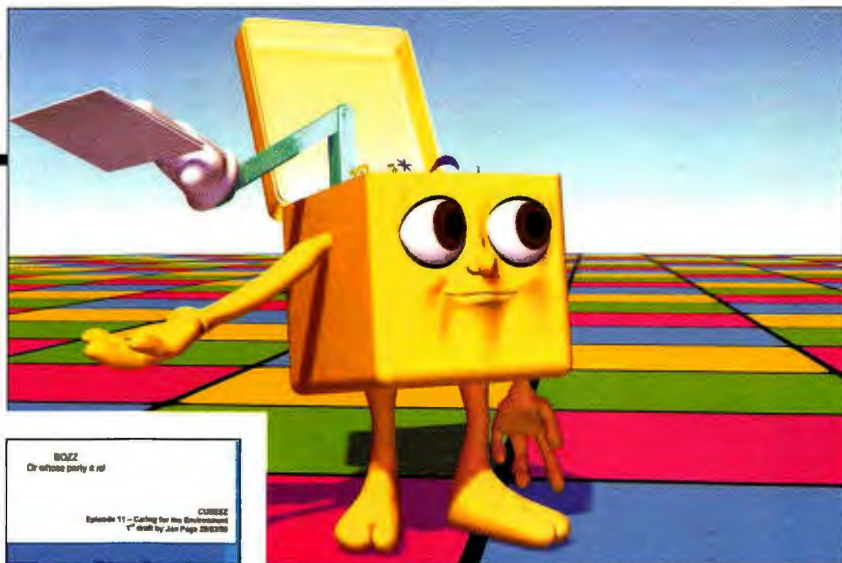
TIZZY
(reading) Please come to my party!

CUBEEZ
(delighted reactions, various)

BOZZ
A party! I love parties!

TIZZY
They'll be games to play.

CUBEEZ
Episode 11 – Carling for the Environment
1st draft by Jan Page 2004/05



LEFT & ABOVE Getting the script right may involve producing a several outlines and as many as three drafts.

RIGHT It's important that all aspects of a character are consistent, including the look, voice and dialogue.

problems – say, a “charging herd of elephants” – that you know will be impossible to achieve on your budget or time constraints? Another area is pacing. Do you stay in one location, or cut quickly from scene to scene? Is the dialogue short statements, or do you have long speeches that cover half a page? Have you got one character talking or many all joining in the argument?

Finally, the length of a script is important. Although ‘one page of script equals one minute of screen time’ is a good starting point, you’ll have to judge for yourself after the first few episodes whether this holds for your series. On *The Cubeez*, the average length was 26 pages for an 18-minute programme. This was only arrived at when the first few scripts turned out to be too short.

As the director, it's important to become familiar with dramatic structure, too. For example, each episode of *Cubeez* relies on a three-act schema. Act One establishes a problem or conflict, be it the loss of an object, or the exploration of an emotion like jealousy, or a combination of the two, while Act Two, the hub of the story, depicts how the problem is resolved. Act Three is where the characters fully understand what has happened. It also reassures the audience that, although the characters have moved on in that episode, the balance of the relationships is re-instated for the next story.

This basic three-act structure is found just about everywhere, from animated kids shows to feature films. There are other structures and variations, but this is certainly the most common. Within this structure, character development is paramount, because that is what the audience want to see: how the characters resolve a conflict and become better people.

In practice, production on many new series may start with one or two complete scripts in place, and the remainder written during production (which, of course, adds to the pressure if a problem is identified with the format of the show). Inevitably, the show evolves as previous results show what is and isn't working. It's not unusual for productions to revisit episode one and make alterations once the series has begun to establish itself, for instance.

TEAM BUILDING EXERCISE

Now to casting your animation and design team. Even if you have an established group to work on a series, putting the design tasks to the right people is an important part of the director's remit. In structuring a team, I always look for experienced leads

who can handle themselves, and then put less experienced but potentially equally talented people under those lead artists. You're ultimately creating teams within the team, and these channels of communication are important. Aided by storyboards, animatics and concept designs, it's your task as director to ensure your vision is communicated effectively to the relevant departments and arrives onscreen as intended.

Effective communication – and the team cohesion good communication engenders – is important when it comes to dealing with setbacks during production. I like to be open about my mistakes as a director. If you can admit when you're wrong in front of others, they are more open with their mistakes, and more willing to learn. Additionally, they will have a healthier attitude to taking risks, which can ultimately improve the production. Alongside the producer, you are the leader of a team that ultimately could consist of dozens of artists from different disciplines. Of course, the relationship you have with your producer is also an important factor. As a producer herself, Sarah Greene sees the director/producer relationship very much as a pivotal point for everyone else. “Creative differences often occur,” she says. “It wouldn't be a creative environment if they didn't, but a united front is imperative.”

Managing people, understanding their needs and having them understand your needs is perhaps one of the most involved aspects of being a good director. It takes experience to learn how to get the best from those around you. You will be asked questions continually, so having a good memory is a great asset because at any one time you might have up to six episodes in various stages of production. This pre-production period is when you can establish your lines of communication to all the various talented people that will make up your ever-expanding production team. And you need to ensure that they know what they're doing and how it all fits into the overall scheme. Ultimately, your task is to keep the objectives clear and get the show onto the screen.



Dave Osborne is a freelance animation director who entered the industry as an animator on the 2D TV series *The Tubemice* in 1987. Since then he has worked in a number of animation studios. While at Telemagination he directed a TV series called *Wiggly Park*, which was followed by pilots, pop promos, commercials. He also directed some episodes of *Noah's Island* and *Captain Pugwash*. *The Cubeez* was his first directing experience of 3D CGI. Since that he has made several pilots and a commercial in 3D and he is now developing some of his own ideas for television.



SECTOR3: STUDIOS

Entrepreneur Down Under



Give up your day job and kickstart your own internationally respected 3D graphics studio. It's all in a day's work for Down Under hobbyist-turned-pro Seon Rozenblum.

BY DAN GRILIOPOULOS

Once upon a time, in a land far, far away, Seon Rozenblum, a 3D hobbyist familiar with *POVRAY* and *3D Studio 4*, decided to give up his well-paid IT job and gain a few months' unpaid experience in an animation company. When his employers finally felt sorry for him and provided a salary, Seon was introduced to *LightWave*. He took to it "like a mouse to cheese" and shortly afterwards an agency friend approached him to put together some Christmas TVCs for a large bookstore chain.

Now, five years on, Seon is at the helm of his own company, Sector3 Studios, producing work for some of the most respected clients in Australia. Telstra, Smiths Snackfoods, Compaq, Bonds, Coca-Cola and AFL have all enjoyed the Sector3 treatment, something the company's Website claims is "largely anonymous but highly effective."

Seon's favourite piece is a fully photo-real dishwasher. "We put together a CG dishwasher TVC for ASKO, and everyone said that it couldn't be done and that it had to be shot as miniatures. But we pushed and pushed, got the gig, and delivered such a

fantastic product that people ask us why it's on our CG reel! It was all *LightWave* and *Digital Fusion*."

Sector3's influences are mainstream, but peripheral mainstream: Disney and Pixar, Manga and even *Star Trek* are cited as major inspiration. Life in general is also a source: "From strange pets next door to the studio, to weird people walking down the street." In the 'photorealism vs stylism' debate, Seon comes down firmly on the side of the abstract. "The holy grail of producing real virtual human actors is getting in the way of self-expression," he says. "*Monsters, Inc.* is probably my all-time favourite CG piece, simply due to the fact that you have no expectation as to how the characters should move and talk. Don't get me wrong – I loved *Final Fantasy*, but as a visual feast and not as a representation of virtual humans."

As to future projects, Seon remains decidedly tight-lipped, although he does hint at an upcoming music video for local star Slippery Finger. In a move indicative of how pervasive CGI technology is becoming, Sector3 has a company branch entirely devoted to producing photo-realistic renders of proposed



FAR LEFT An animated ad for client Sara Lee, broadcast in Australia and New Zealand.

FAR LEFT BELOW A dark and sinister clip from the Slippery Finger video.

ABOVE Sector3 also provides architectural visualisation services to property/land developers and architects.

RIGHT Another snippet from the successful Sara Lee campaign.

building developments (check out their Website for some gorgeous examples). It also has a branch devoted to producing a rendered cartoon series, *Toby's Quest*, a fantasy adventure for kids, where the young Toby has to defeat the evil Murden by entering a strange game world.

However, Seon is more forthcoming about the current state of the CG industry: "It's definitely getting tougher as more players get in on the act," he admits. "But there's definitely a distinction between the talented and the fly-by-nights." This is partly because of the increased demand for CGI, but mainly because more people want to get involved with CGI.

"We're an open house 3D studio," explains Seon. "We allow our clients in to watch work in progress. It gives them a better feel for both the job at hand and what's possible. We've had many clients sit next to one of our animators, and say, 'Man, this is awesome.. I want to learn how to animate!'"

If Sector3 keeps finding pies to put its fingers in, and avoids turning too many of its former clients into 3D artists, then this particular story might have a very happy ending indeed.



FACTFILE

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CREDITS Coca Cola, Compaq, Smiths Chips (Fritolay), Telstra, Phillip Morris, Nintendo and Sara Lee.

"WE'VE HAD MANY CLIENTS SIT NEXT TO ONE OF OUR ANIMATORS, AND SAY, 'MAN, THIS IS AWESOME.. I WANT TO LEARN HOW TO ANIMATE!'"



TOOLS OF THE TRADE

ALL THE 3D ANIMATION shown here was created using *LightWave* and *Digital Fusion*. For its Website, Sector3 also uses *Flash*, *Director* and hand-coding – "nothing beats it for speed and efficiency," says Seon. They must have some fast coders.



GLASS CLASS



All the images for this tutorial
can be found on the cover CD

Getting glass to look good can be tricky in many 3D programs, but thankfully there are a few relatively painless techniques you can use to help whip your glass into shape

BY SIMON DANAHER

First off, it's worth noting that there is no single best all-round solution to accurately recreating glass designs – how you go about modifying your image depends on the type of glass you want to create, the particular look you're after and the circumstances of the scene itself. Glass objects may be familiar, but just because they're mostly transparent that doesn't mean there's less information to get to grips with. On the contrary, glass is a highly complex material, and getting it to look right can be problematic.

The tips and techniques outlined here are applicable in any decent 3D application, but remember that 3D apps do vary. Although you can still fake it without, raytracing really is an essential for rendering glass effectively. With this in mind, the techniques below are aimed at 3D programs with just such a facility. If your results don't look right, double-check that you have raytracing enabled.

In some situations, however, raytracing isn't required for good glass effects. Window glass, for example, rarely needs raytraced refraction. And if a glass object isn't the subject of the shot, or if it's relatively small or distant, you can turn off raytracing entirely and save on valuable rendering time.

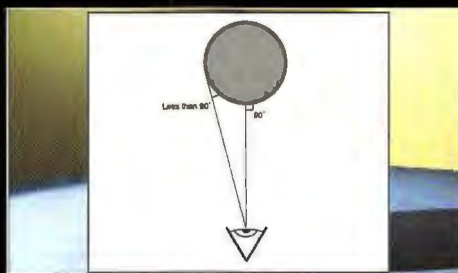


Simon Danaher is a freelance journalist who specialises in computing in general, and 3D and Creative applications for Macs, in particular.

STEP ONE the basics



1 Getting any glass object to look correct requires an understanding of one fundamental property of glass: the Fresnel effect. Here is a simple glass ball with transparency and reflection, but no Fresnel drop-off. The result is unconvincing to say the least.

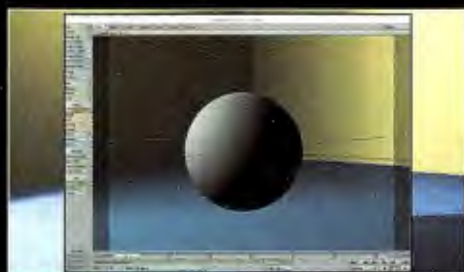


2 The Fresnel effect describes how the intensity of a particular surface quality (in this case the reflectivity and transparency) varies depending on the angle it is viewed at. As a surface turns away from you, the amount of light it reflects or transmits changes.

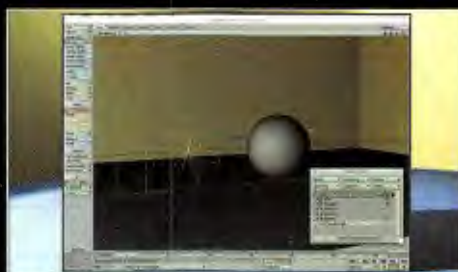


3 Surfaces that face away from you tend to be more reflective and less transparent. By applying this to our 3D ball, you can see the improvement; notice that the reflection of the room is brightest at the edges of the sphere. Understanding this is a key first step to making great glass.

STEP TWO how to create a Fresnel effect manually



1 The Fresnel effect may be directly supported by your 3D app either via a shader or some kind of custom gradient control. This enables you to precisely control the way a material channel falls off. However, if your program lacks this feature, you can still create the effect. First, make a duplicate scene where your object has a flat white material (no specular either).



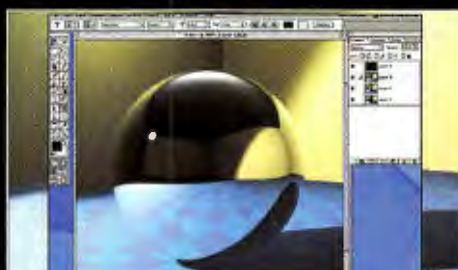
2 Disable all current lights and create a new point light. Place it at the location of the camera and parent it to it, so that it moves with it (relevant for animations only). Some programs don't let you parent objects to cameras, so in this case create a Null object, parent the camera and light to that, and then animate the Null instead of the camera.



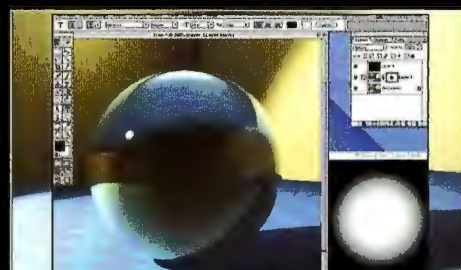
3 If the object you're creating the Fresnel effect for passes behind other objects, you need to give them a flat black material. Turn all other objects off. When you render this scene, you'll now have an object that is brightest where its surface faces the camera and darkest where it faces away.



4 In order to make use of this render pass, you must render out separate passes for each channel you want the effect applied to. Here, separate renders are created for the reflection and transparency channels. To do this, use a material that's 100% reflective with all other channels disabled, and do the same with transparency. Don't forget to reinstate the original lighting scheme.



5 The final step is to composite the passes with the Fresnel render in *Photoshop* (or *After Effects* or similar if it's an animation). The passes are assembled in a single file with the reflection layer above the transparency layer. The Fresnel render is now used as a Layer Mask for the reflection layer.

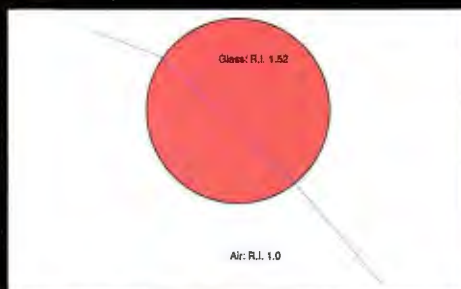


6 To work properly, invert the mask so it's brightest at the edges; this is where the reflection layer will be most visible. To complete the effect, a specular-only pass is also rendered and composited in Screen mode. Even if your 3D program sports a Fresnel feature, this method can be useful in some circumstances.



STEP THREE making good glass

With the basics under your belt, it's time to move on to more advanced glass challenges



1 The reason glass looks the way it does is because it refracts light. As light passes from one medium to another (air to glass or glass to air, for instance), it changes direction slightly. The refractive index feature in your 3D program mimics this process, so you really want this enabled. For glass, use a value of around 1.5 +/- 0.2



2 Because the surface is transparent, however, you'll come up against some technical problems. In some 3D apps, objects (we'll assume they're polygonal) have surface normals that point in one direction. To all intents and purposes, polygons facing away from the camera are invisible. For a transparent object, this becomes an issue.



3 If you don't do something, the back of the object becomes invisible and has no effect on the light ray's direction, so you only get half of the effect. To fix this, you must model the backwards-facing polygons. To demonstrate, here is a more complex polygon object.



4 To create the rearward polys, select all the polygons in the object, copy and paste them, then move them along the direction of their normals to create an outer 'skin': a layer of polys just slightly larger than the previous ones. You can also do this using a duplicated object. If you're in *LightWave*, use the Smooth Scale tool; in *Cinema 4D XL*, the Normal Move tool.



5 You only need to move the skin out just enough to prevent co-incident polygons, not so much that the gap is visible in ordinary circumstances. Next, and most importantly, you must reverse this skin layer's Normals so that they point inwards.



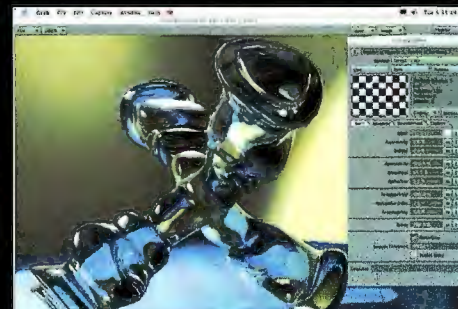
6 You need to assign these outer polygons a different surface from the glass polygons. Do this in the usual way for your app (depending on whether you've created the skin as a separate object). The material should be 100% transparent, with a refractive index of 1.0 to force the ray to change direction again as it passes into this layer. Here's the render without the air polygons.



7 With the air polygons, you can clearly see that the refraction is much more pronounced – the rays are being bent an additional time. Remember that all that is active in the air material is transparency. All other channels are off or set to zero.



8 It's important to discover if your 3D program renders rearward facing polygons by default or not. *Cinema 4D XL* does, but *LightWave 3D* does not, while *ElectricImage* gives you the option via a checkbox. For *LightWave*, this method is essential – although it can prove beneficial in other applications, too. Here the left image is rendered in *Cinema 4D XL* without an air layer. The right-hand image has the air layer.

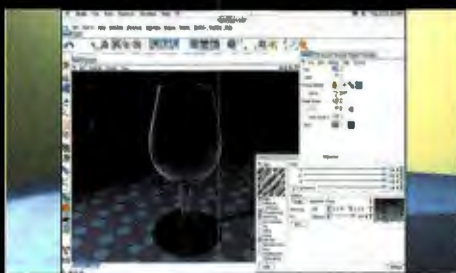


9 You can also use an 'air' layer to add multiple specular highlights, or in *LightWave*'s case, rearward-facing highlights where there were none previously. Simply enable highlights for the air material.

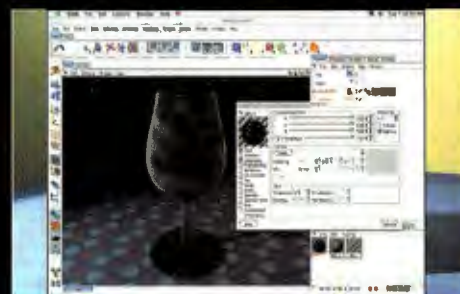
STEP FOUR advanced techniques



1 Detail is the key with glass. Glass isn't 100% transparent, for a start, so you should avoid making any part of the object 100% see-through; a maximum setting of 95% will do. Also, unless it's just been meticulously polished, glass can be dirty. Here is a wine goblet rendered without any attention to dirt. Against this dark background, it's almost invisible.

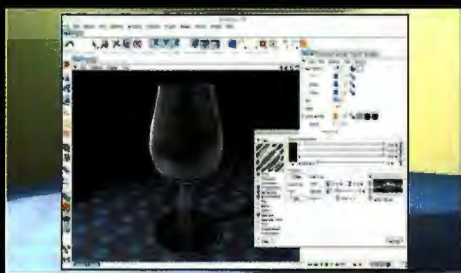


2 Dust, or grease from being handled, will make the surface more diffuse, and less reflective and transparent. Like the other channels, this is influenced by the Fresnel effect. Here, for instance, some fractal noise has been added to the Diffuse/Colour channel using a Fresnel shader to add drop-off. See how it provides diffuse grunge to the object's surface.

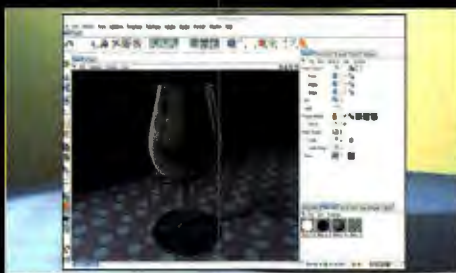


3 Basically we've said that the edges of the object should behave as if they are 100 per cent diffuse, but modulated with some noise. You can achieve a better result if you create a custom map by literally getting your hands dirty, pressing them on some paper and scanning the prints in.

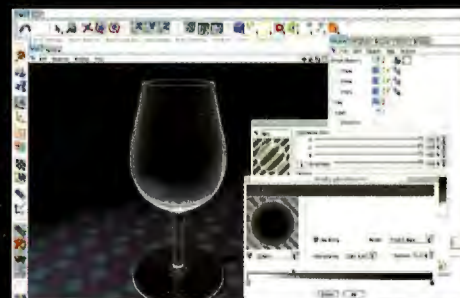
STEP FIVE going further



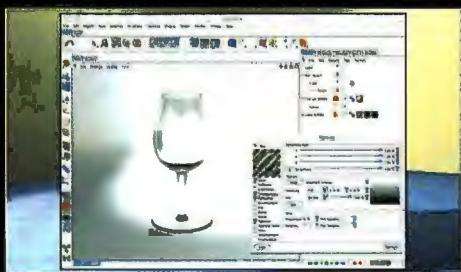
1 Like all reflective objects, glass needs something to reflect in order to appear realistic. If your scene has an extensive set, then you won't have too many problems. If not, then you can use either an environment map or some special reflector objects. There's nothing to stop you using an environment map and raytraced reflections. In fact, it can work well.



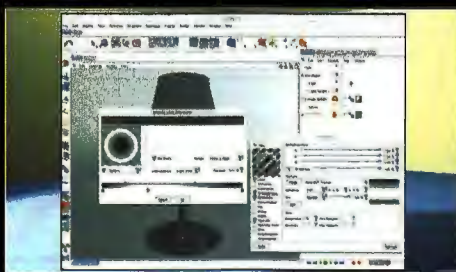
2 Some luminous planes positioned around the scene can help to intensify reflections and are particularly useful for glass. Rectangular shapes are a simple and elegant solution. Subconsciously we're used to seeing these types of reflections because they simulate the light diffusers used in photographic studios and windows.



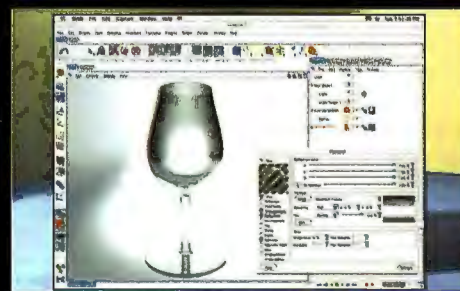
3 If you're happy with a more stylised look and simply need the glass to stand out from a dark background, use the Fresnel effect in the Luminosity channel to create a bright edge around the object. This is both quick and effective.



4 Likewise, if the background is light, you can use Fresnel effects to darken the edge and achieve greater definition. In this image, for example, we want an over-exposed, brightly lit look, but the glass material suffers as a result.



5 Gradient-based Fresnel controls are ideal here, because you can adjust the reflection and transparency channels to fashion a deeper, darker outer edge to glass objects. Notice that the reflection Fresnel gradient has an extra black portion outside the white tab.



6 This, combined with the lack of diffuse shading and deep transparency fall-off, creates a thin dark edge that outlines even the totally blown-out areas of the image, ensuring the shape of the object is always visible.

qanda

If you have a question for our 3D experts send it to us at 3dw.qanda@futurenet.co.uk
You find more Q&A advice on our Web site at www.3dworldmag.com



How can I make my renders in *3ds max* look like they're being viewed under an electron microscope?

GAVIN THOMAS, VIA E-MAIL

a. Creating such an effect isn't all that difficult. The material set-up is straightforward enough, and by introducing a few additional elements you can also give your scene an extra frisson of realism, which can make all the difference to the final result. When trying to recreate something from real life, albeit an object viewed using a piece of equipment, a good rule of thumb is to obtain as much source imagery as possible. You'll find plenty of usable electron microscope material on the Net. Some damn fine examples of CG re-touching and/or emulation, which is what you're trying to do yourself, are also freely available. By analysing these images, you

BELOW LEFT Multi-Pass Depth of Field effects can add extra realism to an image, especially if coupled with scene motion blur.

BELOW RIGHT Even simple scenes can look interesting with this effect. Have a look at any electron microscope gallery and try to emulate an image yourself!

can determine how to design the base material and camera set-up.

Electron microscope images normally take the form of either a black and white, green or faux-coloured image, which is easy to implement in post (simple colour blending layer in *Photoshop*, for example), and relatively easy to produce in the Material Editor. Electron light also behaves similarly to normal light, so one feature you'll notice is that slight shadows are cast onto other objects under the microscope's gaze.

The material should typically be an Oren-Nayar Blinn standard material with diffuse and ambient set to black. Also, to avoid any additional lighting, the environment ambient light should be set to zero. Create a Falloff map in the self-illumination slot and set it to Perpendicular/Parallel; you can amend the Falloff's Mix Curve if so required to add more intensity to the self-illumination. To fade the self-illumination down slightly when a shadow is cast on the object, add an additional Falloff map in the white slot of the first Falloff map. Change the Falloff type to Shadow/Light and amend the Mix Curve if required. Open the black colour swatch and change it to a mid-grey; this brings down the side self-illumination a touch when receiving shadows as self-illuminated materials do not show shadows! You could also copy this map tree into the diffuse slot to add extra illumination and to create additional



effects. Now you should add a slight texture to the material – by creating a slight bump (or displacement) map to suggest irregularity. A simple noise map should suffice, although a smoke procedural map is better. Both textures should be relatively small and boast high iterations (for the smoke) to imply fine detail.

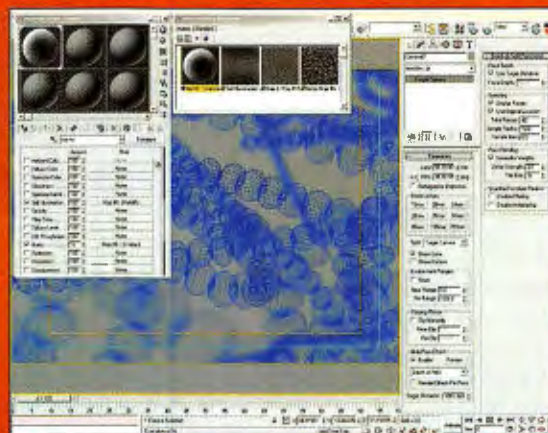
Create several combinations of this type of material; you can then assign these to different elements in the scene. Simply assigning one global material to your image isn't enough to create a decent effect. Also, amend the material's self-illumination to create a slightly translucent effect. Don't add things like raytracing or refraction. Reflections and so forth don't occur, and adversely affect the impact of your composition.

Don't be afraid to add copious amounts of Depth of Field! This can make or break your image. Granted, multi-pass renders can take forever to render as each pass has to be individually created then composited together, but the result is always much more worthwhile. Don't consider using a post effect, because although 3ds max's Depth of Field is easy to set up and use, the results are often quite poor and leave artifacts. Use the multi-pass render technique instead; you'll find the set-up settings in a camera's rollout. Use a low radius of about 10 and high amount of passes; something around 20-50 should give a decent result. The higher the number of passes, the better the effect, especially if the dither strength is upped slightly to break up any harsh lines that may occur when the images are composited together.

If your scene and computer permit, try to use as much geometry refinement as possible. The self-illumination will highlight these refined details and add more realism. One quick and easy method is to use MeshSmooth and displacement modifiers, with the displacement using a procedural map as the displacement map, so you can get as close to the object as required without losing detail. Also, if NURBS surfaces are used, you can rely on extra tessellation (depending on the size of the object in the frame) to add extra detail. Obviously, this is at the cost of render times.

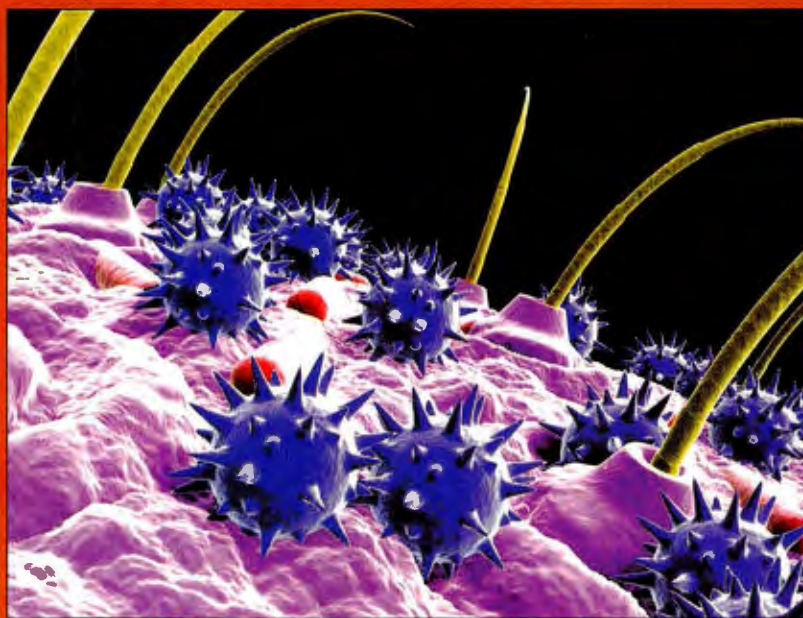
Finally, you can create a false-coloured render by adding a Falloff map in the diffuse and self-illumination slots, which colours the illuminated Falloff effect. Additionally, you may want to add slight feathering to the image. Simply clone the relevant objects and apply the self-illumination only to these cloned objects. If you add a noise controller to them and set the entire motion cycle to one frame, with motion blur added, they now appear to be slightly furry, thanks to the smearing and diffusing of the motion blur. Again, of course, this does add to rendering times.

Overall, you can mock up a decent emulation if you have



LEFT The material set-up is straightforward enough, but you can tweak, refine and add extra detail, like displacement and diffuse maps, to enhance the result if you like.

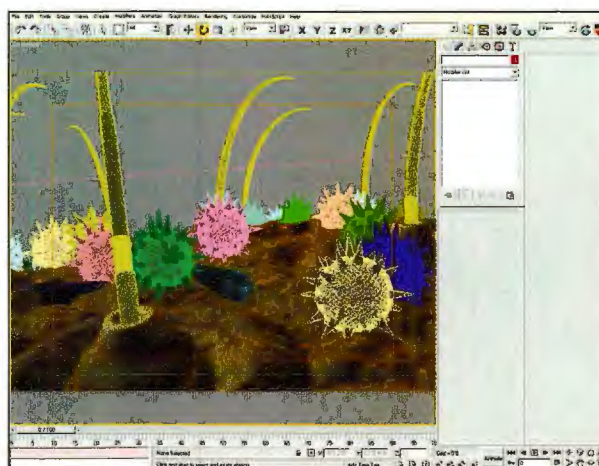
BELOW By simply amending the diffuse and self-illumination maps, you can colour the same scene to simulate the faux-colouring of a true electron microscope image.



enough source material, break down every element into its core components and then work out how to replicate each one, step by step, until the piece is finished. Naturally, the true test comes when you unveil your creation besides a true electron image and your viewer can't distinguish between the two!

BY PETE DRAPER

RIGHT Don't be afraid to go mental with polygons! Polygons are the perfect building tool in this kind of image-making and extra refinement at render time can be brought out with the self-illuminated materials.





How can I animate the hydraulic components on a mechanical arm using *LightWave*?

JUSTIN C. BREMMEL, VIA EMAIL

a In reality, of course, it's the hydraulics which force the joints of a mechanical arm to move – but in 3D it's easier to just rotate the joints directly and make the hydraulics follow the motion. There are two ways to do this effectively in *LightWave*, one slightly more complex (and more powerful) than the other.

To illustrate the point, we've modelled a simple mechanical arm with a hydraulic cylinder designed to make the elbow rotate. We've modelled the arm at a 90 degree angle and made both parts of the hydraulic cylinder also stick out at 90 degrees, so they don't actually connect. The trick of getting the hydraulics to slide

IN 3D IT'S EASIER TO JUST ROTATE THE JOINTS DIRECTLY AND MAKE THE HYDRAULICS FOLLOW THE MOTION

in and out is actually just to make both ends of the cylinder point at each other, so they intersect in the middle. This is a lot easier than making both parts connect at one end and making them slide in and out. You'll also note that we've set up pivot points in modeller and also parented the lower arm to the upper, and then parented each part of the hydraulic cylinder to the part it's connected to.

In Layout, it's a simple matter of selecting either part of the hydraulic cylinder and pressing [m] to enter its motion properties panel. Here you have the option of a Target Item which you should set to the other part of the cylinder. Do this to both cylinders and

they should both point directly at each other, and look like they're sliding in and out. Unfortunately, *LightWave* assumes that the item has been modelled pointing in the positive Z direction, so invariably one or both of the hydraulic arms will now point in the wrong direction. You could use a null object to offset the rotation by 180 degrees, but there is another method using IK that gets around this and works regardless of which direction you modelled the cylinders.

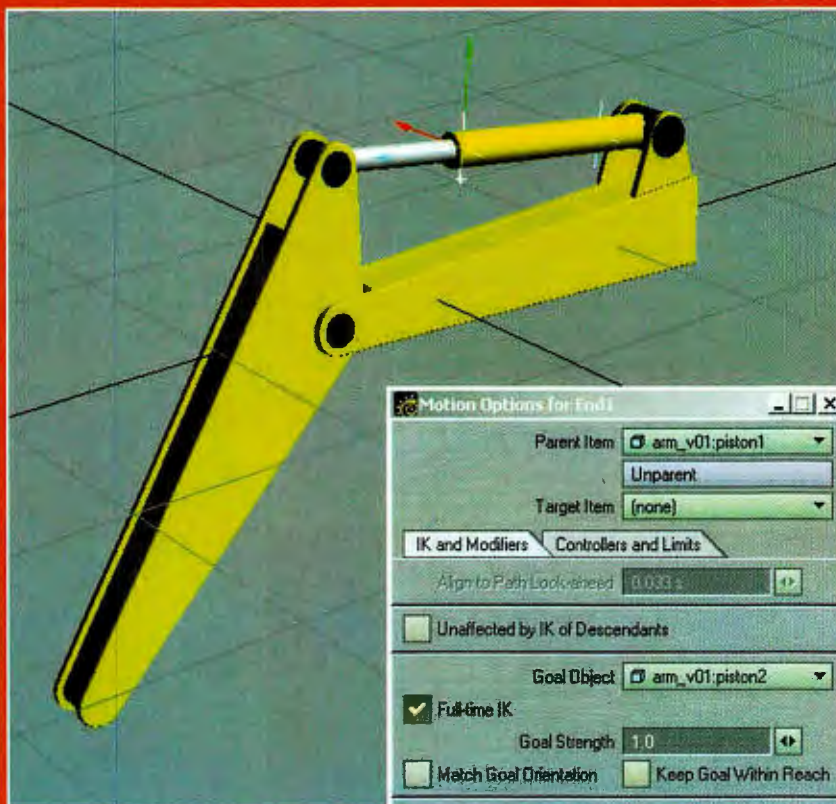
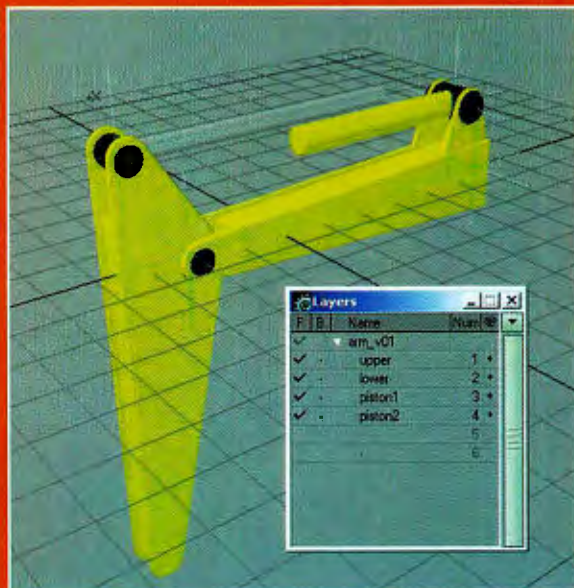
Add a null and parent it to the lower part of the cylinder, moving it so that it's at the tip. Enter the motion panel for the null and on the IK and Modifiers tab, set the Goal Object to be the other part of the cylinder and activate Full-time IK. Go into the motion panel for the cylinder itself, turn off the Target Item feature and in the Controllers and Limits tab, set the controller to IK for whichever channel is needed to rotate the cylinder to look at its brother.

Now go into the motion panel for the cylinder's parent, the arm itself and activate Unaffected by IK of Descendants. This stops the actual parts of the arm moving as well. Do this for both parts of the arm and you should have a nice set-up that slides in and out as you rotate the arm. If you intend to use IK to control the motion of the arm itself, however, you might prefer to parent a null between the cylinder parts and the arm parts, so that the two IK chains don't interfere with each other.

BY BEN SMITH

BELOW LEFT A robotic arm in Modeller. Pivot points are set up for all the parts, and the two sides of the cylinder are parented to the relevant sections of the arm.

BELOW RIGHT The arm in Layout, using IK to make the two sides of cylinder point at each other. Rotate the lower arm and the piston slides in and out, just like the real thing.





What's the best way to model a 3D spiral galaxy using *Maya*? JOHN LANG VIA E-MAIL



Your first step should be to knock out some stars using the Particle Tool. This initial group of stars will form the central core of your galaxy. Go to the Dynamics menu set and select the Particle Tool option box. Label the particle 'Core Stars'. Make the Number of Particles 16 and the Maximum Radius 8. Now display the top and the perspective view so that you can see how your galaxy will form in 3D. In the top view, click around the origin of the scene. As you click, you create particles in a spherical region around the cursor. Click-drag to position a group en masse, or press Insert to move individual particles to a specific position. Hit Enter to complete the particle object. The result? A big ball of stars!

Now to the spiral arms. Go back to the Particle Tool option box, and call this particle group Arms. Make the Number of Particles 10 and the Maximum Radius 2. Scatter these more tightly packed stars through the length of the galaxy in a straight line. You'll give them their spiral shape later. Now select both the Core and Arms particles. Go to Fields and choose the Vortex option: this applies a Vortex Field to the particles. In the Attribute Editor, set the Vortex Field's Volume Control attribute to None to ensure all the stars in your galaxy are influenced by the Vortex Field.

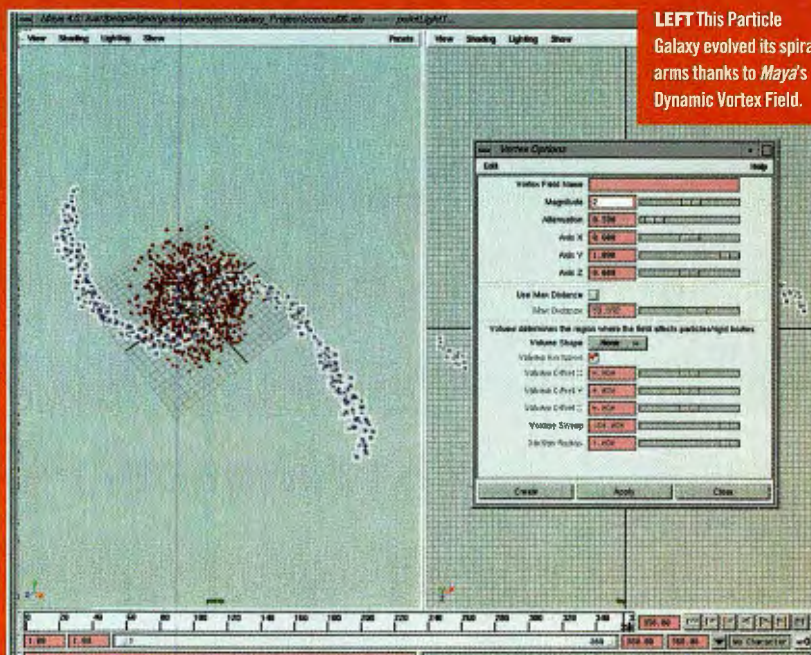
Make the Vortex's Field Magnitude 2. You want to make the Vortex Field rotate the particles so that the inner ones move faster than the outer ones. As the outer ones are moving more slowly, they will give the galaxy its characteristic spiral shape. To do this, make the Field's Attenuation 0.5 so that the strength of the Field diminishes over distance. Go to the start of the animation. Set the playback preferences to display every frame. This is the only way to accurately see the particle dynamic simulation. Play the scene until the galaxy has evolved into a suitable spiral shape (it should take around 350 frames).

To make the particles look more like stars, change the particle type to Sprites using the channel box. In *Photoshop*, create two star textures. The yellow one will be for the older core stars while a blue circle will be applied to the younger spiralling stars. Make sure that both textures include a circular alpha channel, to make the particle sprite transparent at the edges.

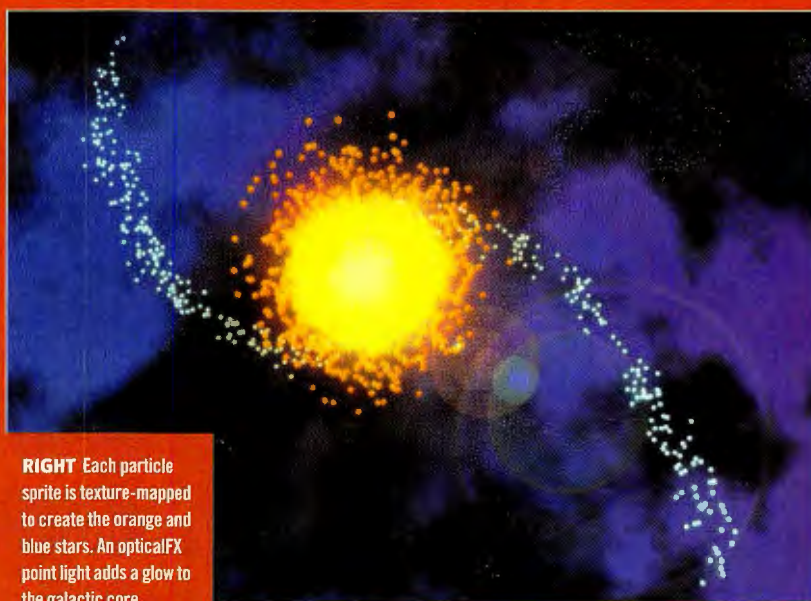
For the dense gaseous core of your galaxy, create a point light. Make it orange with an intensity of 1. In its attribute editor, click on light glow to give the light an opticalFX attribute. Now set the Glow Type to Ball and the Halo Type to Linear. Click on lens flare if you must!

Finally, render the particle sprites with the Hardware render Buffer (Window>Rendering Editors>Hardware Render Buffer) and the point light Optical effect as a software render, then composite them together.

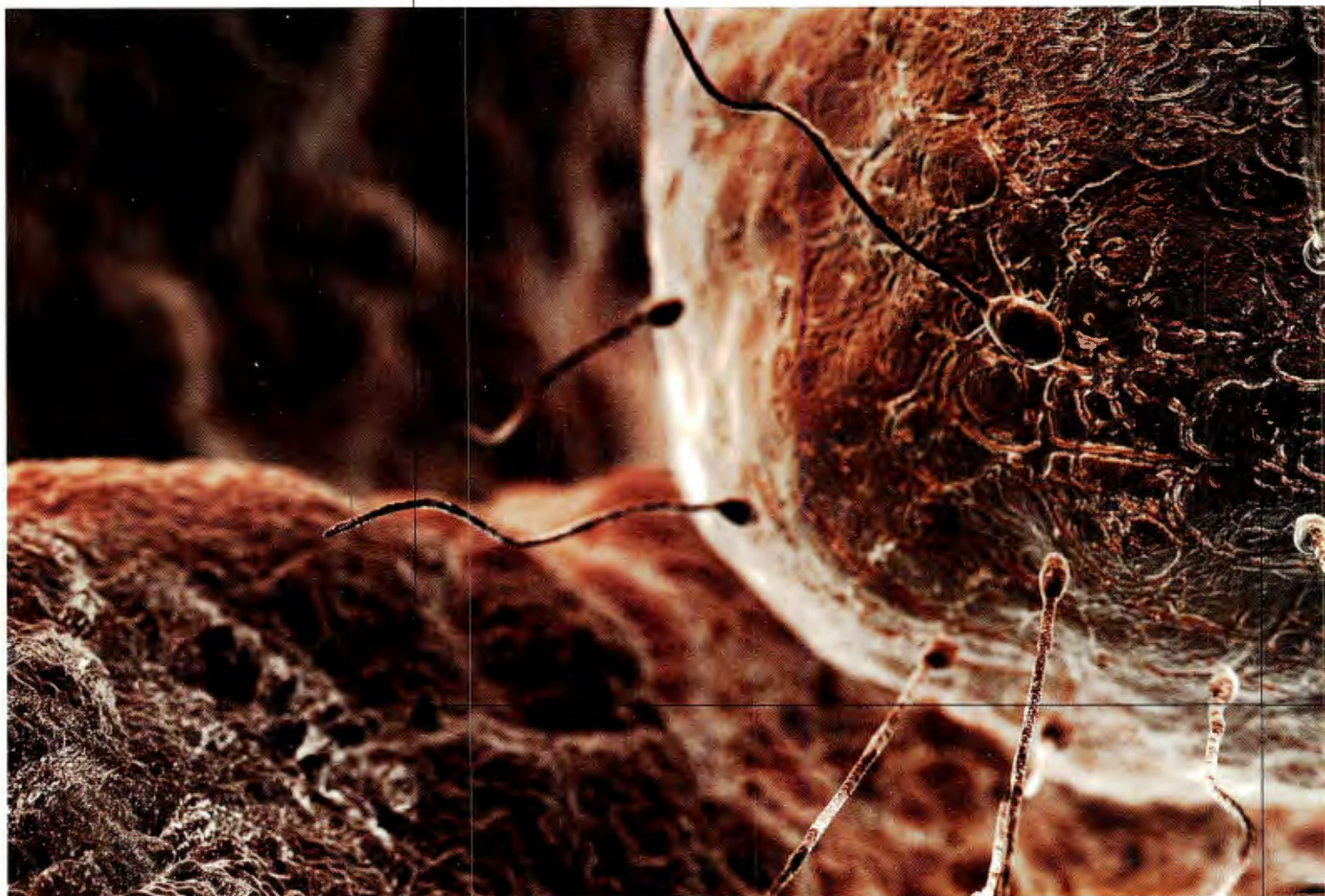
BY GEORGE CAIRNS



LEFT This Particle Galaxy evolved its spiral arms thanks to *Maya*'s Dynamic Vortex Field.



RIGHT Each particle sprite is texture-mapped to create the orange and blue stars. An opticalFX point light adds a glow to the galactic core.



HOW TO BUILD A HUMAN

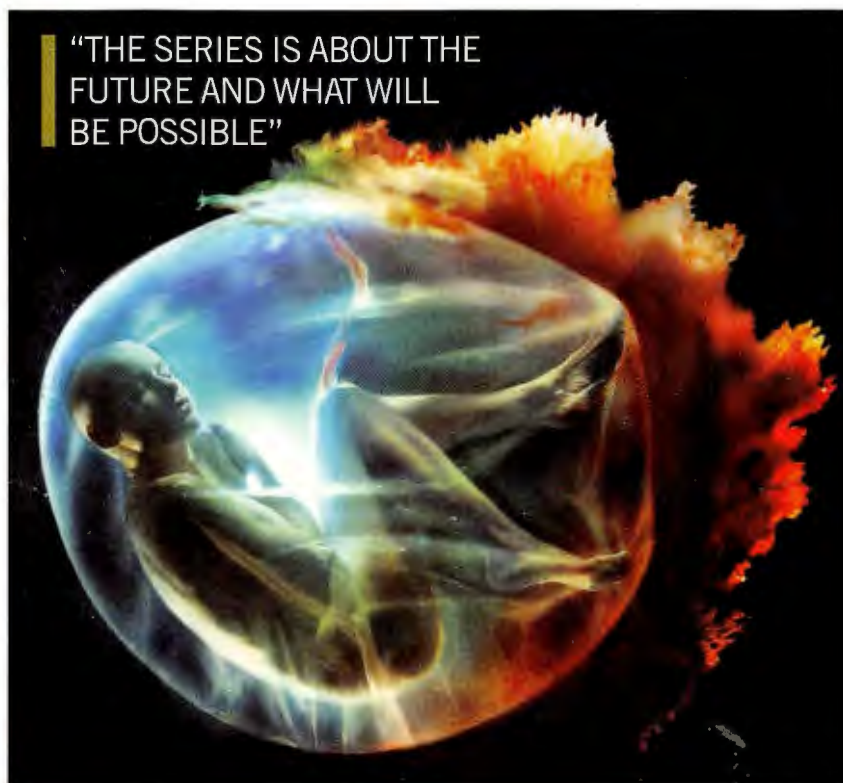
For the latest BBC science extravaganza, *Maya* and *RenderMan* were used to recreate the human body down to the sub-cellular level

BY ANDY STOUT

ABOVE Sperm surrounding an egg inside a fallopian tube. By the end of the production period, the total amount of discrete subdivision poly meshes in the project had grown to something approaching 15,000.

One of the signature programmes of BBC2's winter schedule, *How to Build a Human* is a four-part series that builds on the corporation's reputation for graphics-based science programming at its best. And while some of its output in this field sees 3D being farmed out to facilities scattered around the country, like FrameStore (*Walking with Beasts*) and 4:2:2 Bristol (*Mammals*, the next big Attenborough show, currently in production), this particular project has been completed in-house at the Beeb's Specialist Graphics department at White City.

The programme sets out to examine science's current knowledge of genetics in what CG Designer and Supervisor Richard Morris describes as "an exciting and easy-to-understand



"THE SERIES IS ABOUT THE FUTURE AND WHAT WILL BE POSSIBLE"

ABOVE The iconic image created for the series titles by rendering footage together with a 3D model.

way" of examining potential medical techniques lurking on the fringes of possibility. "The series is basically a lot about the future and what will be possible," adds Richard, "predicting our biological lives, choosing the sex of our kids, building new body parts and building or cloning new human beings, and understanding and even reversing the ageing process."

Inevitably, depicting all this information calls for some serious 3D – about 25 minutes' worth in the designer's estimation – accompanied by standard 2D effects work using both *Tremor* and *Inferno*. "The cell world which makes up the key graphics in the series was designed, built and shaded in a pre-stage of R&D over two and a half months," he explains. "All in all, the project consisted of me for eleven months, two other animators for three months each and a third animator for about a month. We also had two 2D compositors working on it for four months."

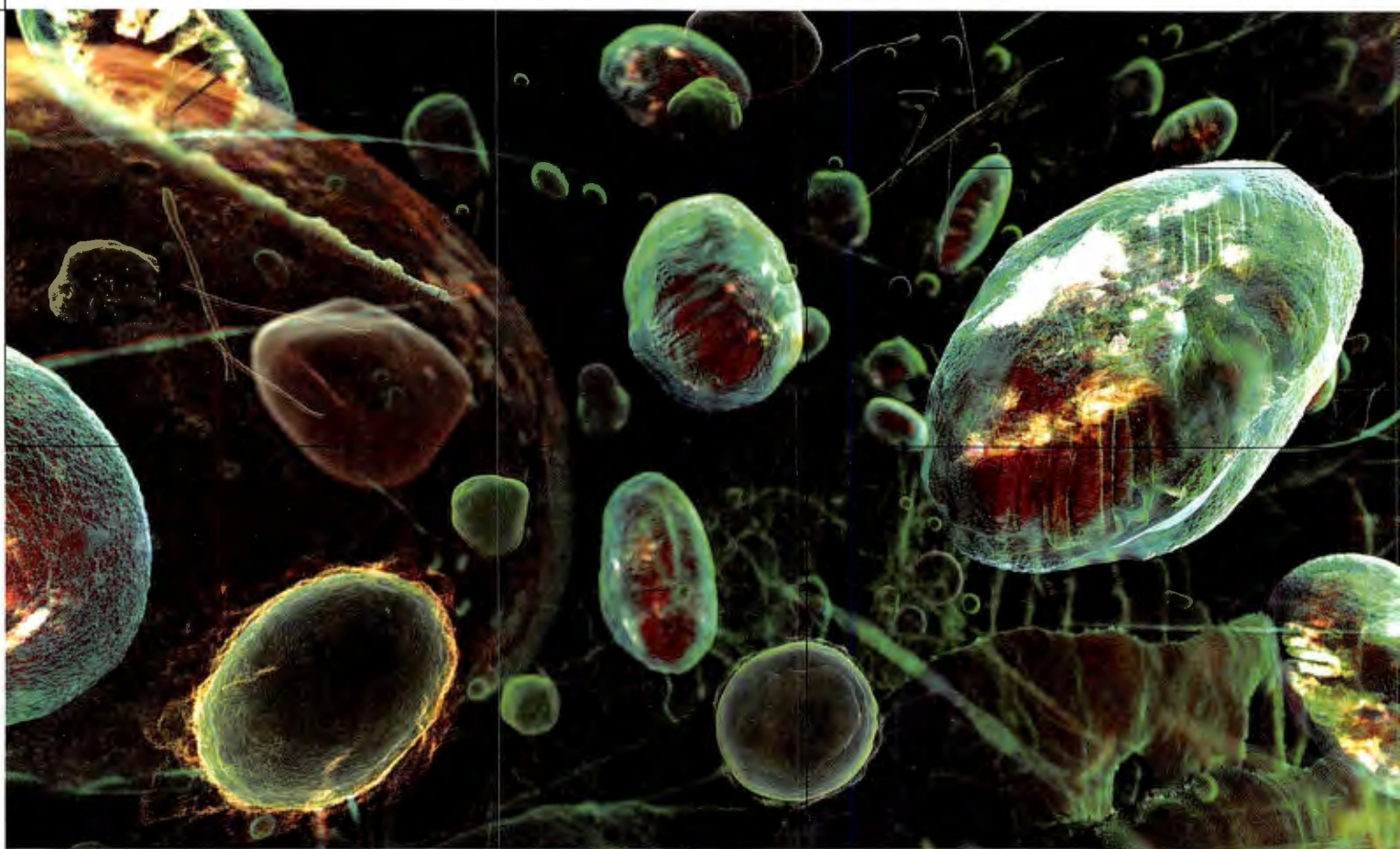
So, a relatively small team in terms of man-hours in front of workstations, but Morris is an old hand at this sort of project, having previously worked on the original *Human Body* while at Red and *Body Story II* while at MPC. As with *Body Story II*, most of the work was accomplished using the ubiquitous *Maya* and *RenderMan*.

"For all the cell stuff, *RenderMan* was once again the only tool for the job," confirms the designer, "enabling the design to have power, flexibility and strong use of displacement and depth of field. It also provides efficient and fast – well, relatively fast – render times. The imagery produced would simply be impossible to recreate in the stock *Maya* renderer. Despite the fact that it doesn't even have a decent open scene file browser written for it yet and it's near impossible to cancel a test render, *Maya* was used for modelling and animation. For nearly all of the geometry, Pixar's subdivision surfaces were used in vast preference to *Maya's* – here's to the ever-expanding *RenderMan* drop-down menu!"

DESIGN FREEDOM

There are some benefits to being such a 3D graphics veteran: namely having more responsibility and freedom on the design side. And those are things that Richard has exploited to the full...

"Apart from a few colour changes here and there, what you see is how I meant it to look. Coupled with the fact that the cell graphics were all occurring in one singular environment, that meant I could really develop and hone the cell world to a much finer degree. The graphics in *Body Story* were mechanistic, explanatory sequences to illustrate the narrative. In *How to Build* it was decided that the graphics were primarily for emotional purposes as opposed to providing mundane scientific explanations. This in itself meant a lot more scope for drama and fun – and ultimately more visual freedom."



ABOVE A generic shot inside the cell within the cytoplasm. Particular attention was paid to aqueous movement within the body this time around.

And the result is, at least if the main cell sequence is anything to go by, far ahead of what was achieved in *Body Story II*. Individual cell elements – chromosomes, organelles and so on – are more complex from a displacement, hue and lighting point of view; while the general cytoplasmic medium – the ‘black space’ in which everything sits – has also been realised in a more sophisticated manner.

“Although I agreed with the programme makers that one of the key things with the design of the cellular world was to give it a sense of space, it had to be pretty densely packed in there just to stop the black from creeping in too much and making it seem too diluted and bland,” says Richard. “Anyone who has created a scene like this will know that to fill CGI worldspace

“TO FILL CGI WORLDSPACE YOU HAVE TO PACK IN TEN TIMES MORE STUFF THAN YOU THOUGHT”

you have to pack in about ten times more stuff than you thought you did. As a result, the cell, although nowhere near as dense as a real cell, is in computer terms very heavily packed.”

Pre-rendered pictures, .rib boxes and the like were used where possible to mitigate this process, but they didn’t alter the fact that many shots were processing a tremendous amount of geometry. With most cell elements animating or deforming in some way as well, render times cranked up to around eight hours a frame for certain scenes, with the .rib generation taking another 40 minutes by itself. Partly because of this, Richard switched over to the *Maya* renderer for some of the more traditional live-action CG sequences, landscape and fetus shots.

“It was preferred for them because firstly it could give the *RenderMan* render farm at the BBC a bit of a breather to catch up. It was also useful for raytracing effects, quick procedural texturing, and globally dealing with animated live-action plates from a set-up and workflow point of view.”

Technically, probably the hardest shot to produce was what Richard refers to as the ‘Master Mother cell shot’, a zoom-in on a colony of around 200 cells through the cell wall and down to the length of a single gene. “As you get close to the Master Cell and are about to penetrate it, using pre-rendered cards or backdrops was no longer an option because you have real 3D

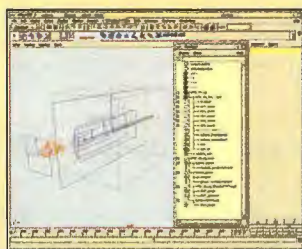
THE CAMERA EYE

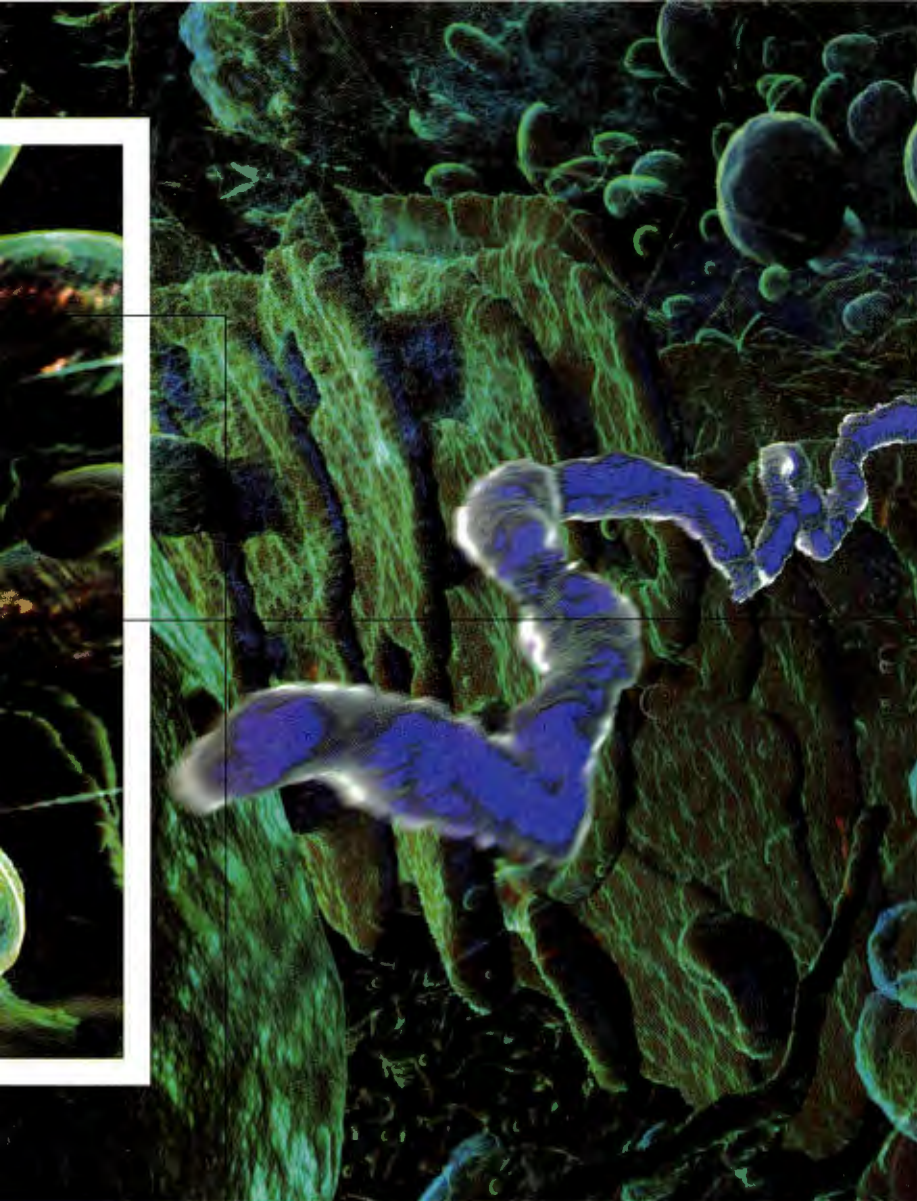
Long a fan of dynamic shaders, Richard developed several new properties for the *Maya* camera for his latest project, including a gyroscope expression that output a figure to represent the camera’s state of tumble. When linked with the shaders, a pitching or rolling camera therefore gave the user changes in shade and lighting in real time. A similar technique was used to convey speed: a calculated velocity of the camera prompting incandescence to

burn and the whole scene to suddenly brighten in response to rapid acceleration.

Close-to, camera projection boxes were also used because they were easily resizable and provided easy control of an object’s shading with respect to depth (an element changes colour as the camera approaches it).

The ‘How To Build...’ camera, showing custom attributes, the actual camera with all its controls and motor co-ordinate systems attached and extensive depth of field and fog controls.





parallax going on, so I had to crossfade to a pass of the real geometry at some point.

But what you're looking at through the cell wall is just an immense amount of cellular material and it's *all* deforming and subject to animated glow and colour. In this shot, you're getting the biggest view of the cell out of all the shots I did, so it was impossible to just delete what wasn't in front of the camera."

Purely from the standpoint of sheer memory and .rib generation time, a clever solution had to be reached to get the frames finished in time. Richard won't reveal all the techniques used, but one of the keystones was devised by team member Andy Peters. He created a utility that split the camera up into 16 smaller cameras without compromising lighting, but which removed unwanted geometry and animation. This reduced the per-frame rendering down to 16 smaller and more manageable pictures, which were then taken into Nothing Real's *Tremor*, where a custom macro used a careful naming convention to instantly re-assemble the pieces into the completed frame.

NEW FEATURES

Richard and his team have also added several new visual features to the cell world depicted in the programme, extending and building on the dynamic shading work the designer implemented with *Body Story II*. Oscillating hues have been included, and the hue and brilliance of elements can now

ABOVE A strand of messenger RNA. After a long period specialising in biological 3D, Morris says "I do intend altering my subject matter a bit for the next project, as long as the creative freedom and design potential are still in place."

ABOVE RIGHT A still produced for a video cover of a hologram heart and machine. Live action scenes were rendered using the *Maya* renderer rather than the BBC's main renderfarm.



THE INGREDIENTS LIST

UPON COMPLETION, THE MASTER SCENE FILE CONTAINED:

- 138,732 nuclear particles
- 1,524 microtubules and microfilaments
- 1,330 cytoplasmic organelles
- 1,088 mitochondrion
- 400 strands of chromatin
- 240 mobile proteins
- 135 membrane proteins
- 118 double helixes
- 102 slabs of rough endoplasmic reticulum
- 70 mobile pieces of messenger RNA
- 63 sheets of cytoskeleton
- 43 X chromosomes
- 36 pieces of Golgi apparatus
- 6 bunches of smooth endoplasmic reticulum
- 4 hero peroxisomes
- 2 liquid lipid membranes
- 1 Y chromosome

be linked to various properties of the camera, which can in turn change on the fly. One of the most important enhancements, though, has been the introduction of messy, chaotic reality into the imagery.

"Other techniques I tried to employ were what I would for fun term 'anti-3d'," Richard explains. "I have never been a fan of clean and perfect imagery and often try to roughen stuff up in different ways, add mistakes that are perceived more as an indicator of real life as opposed to CGI errors – kind of like the Bayeux Tapestry that had one tiny patch all wrong. Some of this was achieved using some weird displacement effects and this was particularly effective with the atomic DNA shots. No-one really knows what a DNA molecule would truly look like, but one thing is for certain: if you could image it quite clearly and at decent resolution, then it wouldn't look very clean or perfect. Similarly, I used written devices to flash bits of geometry, alter their shading or lighting on the odd frame here and there and also make floaty particle matter pop, fizz and generally appear alive.

"Some of the technical purists might see it and think it's CGI artefacts," he concludes, "but believe me it's in there on purpose, and for good reason."



For more detail on the project, not to mention the infamous *Gallerie Abominatae* which amply demonstrates how not to do 3D, head to Richard Morris' own website: www.jackals-forge.com



Check out the 3D World cover CD for examples of Bas's animation.

BAS VISUAL CONCEPTS

fantasy worlds

"The world of make-believe is finally believable, thanks to 3D," says Bas Waijers, whose recent work convinced him to pursue a more personal vision

BY VICKI PEARSON

guts to expand my business by focusing on the types of projects that I love most." But it wasn't just the big clients that helped Bas into the world of 3D animation; a more personal project also helped.

THE STORYTELLER

In-between client work, Bas been spending the last two years on Drudibu, a pet project with an emphasis on storytelling and character design. "I started working on this character, called Drudibu," he remembers. "I began by developing storylines and then worked on the look and feel using 3D imagery." Not content with improving his animation and software skills via the project, Bas also hopes to take Drudibu into the real world. "The initial idea was to make a children's book, but while working on it I realised it would be so much nicer to make it into animation."

Bas has found 3D to be the perfect format to express his self-penned stories and characters. "I like working in 3D because it gives me the ability and freedom to create characters and worlds from my imagination. It's the best way to make the impossible possible, and the greatest challenge is to do it in a way where people can relate to the characters and the worlds

ABOVE This *Singing & Dancing* image comes from a textbook cover for schoolchildren aged 7-10, published by Wolters Noordhoff. It was also used as part of the book *Investigate & Sniff*.

With a background in advertising, Bas Waijers knows how to appeal to an audience, and his tool of choice is 3D animation. Six years ago, he set up one-man company Bas Visual Concepts in Amsterdam, starting out with CD covers and concentrating on graphic design and 3D illustration. More recently, he's taken the leap into 3D animation – and now his impressive portfolio features CD artwork, the *Blender* 3D software manuals and two 3D animations for athletics manufacturer Nike.

"After working on the Nike animation in March 2001, I made an effort to shift my focus to the animation industry," the designer explains. "I wanted to take the chance to pursue my greatest ambition and, in doing so, revamped the look of my business and started to work with *3ds max*. I finally had the



ABOVE AND RIGHT One of two personal projects, *Drudibu* features the titular character as a young boy who falls in love with a girl and follows her into another world

ABOVE RIGHT This image, entitled *Erazor of Love*, is from Bas's *Gender Bender* series and shows a different style from the rest of the artist's creations.

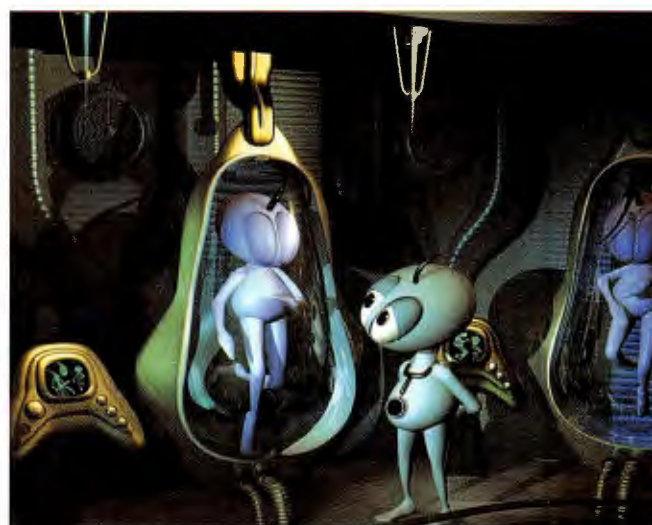


they live in. I guess the trick is to come up with fantasy worlds that have a touch of reality to them."

Bas's designs and animations are more than just a money-spinner, however; the artist is eager to demonstrate his skillset on other levels, too: "I'm happiest if I can begin a project at the conceptual stage. I like to combine 3D elements and illustrations with graphic design, photography and typography."

Software limitations proved an initial stumbling block, admits Bas. While *Bryce*, *Infini-D* and *Photoshop* were suited to his original static illustration work, animating characters required much more powerful software – namely *3ds max*. Indeed, Bas's obsession with his pet project spurred the artist on to master discreet's flagship 3D tool from the ground up. He's already begun developing the character's head. "It will flow along with my progress in learning *3ds max*. 2002 will be a very interesting year because then I will finally learn how to fully animate characters," he promises.

Fortunately, the artist can transfer much of what he's learned in illustration directly to animation, particularly his methods of preparation. "I start a project by sketching scenes and characters in a dummy, and when I think they're in good shape, I start up



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CREDITS Not a
Number/Blender, Nike,
Wolters-Noordhoff Publishing,
BMG Records, Wieden &
Kennedy, Creative Red Book

the computer and begin to model. To me, sketching with a pen in a dummy works a lot faster. When I sketch on the computer, there's always the danger of getting stuck on one idea."

By continually nurturing and expanding his software palette, Bas ensures his work is now more flexible and dynamic than ever before: "Making animations is a whole new adventure," he enthuses. "I want to combine all these disciplines and then add my own music to it."

Future projects include collaboration with an Amsterdam studio to create a series of 3D animated shorts, plus the chance to bring storytelling to a nightclub with a group of VJs, DJs and live acts. Visit Bas's website to keep abreast of the latest developments.



sooty's ugly mug

Merchandising. Could it be the Devil's way of distracting talented CG artists from the task of creating great television series for children? **BY GARRICK WEBSTER**

SOON YOU'LL BE ABLE TO
HAVE YOUR CHARACTERS
IN BLOW-MOULDED
PLASTIC IN 10 MINUTES

The other day I was watching *The Antiques Road Show* – a bizarre source of inspiration for an article in a CG magazine, indeed. A little girl was having her collection of Sooty mugs and other collectibles evaluated by one of the BBC's antiques experts. Along the way, the gentleman made the cynical remark that just about every children's television series since the 1950s had been used to drive merchandising of one form or another.

He certainly had a point. From Sooty to the present day we can easily reel off a list of

with the likes of *Toy Story*, where the movie about toys spawned the toys, and the toys gave birth to the *Buzz Lightyear* animated TV series.

But is the marketing frenzy associated with any popular children's TV program something that should excite 3D artists involved in character design, or something to be wary of? Undoubtedly, technology is coming into place that means the same 3D model that is rendered for the small screen can be ported across to the computer game, or even to a CAM (computer-aided manufacturing) system. Soon you'll be able to have blow-moulded plastic versions of your creations coming off the production line in about as much time as it takes to render 10 minutes of animation, it seems.

Speaking with a creative director from a studio well known for its work on CG series for children, the economics of the television market are a huge factor. Margins are slim, he told me, and if you don't have concepts for how you're going to sell your characters as toys, books, videos, games, Websites and so forth, you could end up making no money at all. Or worse still, in the red.

So how should aspiring character designers working towards CG television series proceed? With care, is my answer. Despite the apparent requisite for marketable material, the process of inventing concepts, characters and stories should not be the key factor that dictates to you on a creative level.

The specific capabilities of a CAM-operated blow-moulding machine should never determine how many legs your main baddie has, nor how he or she uses them. And the marketing mafia's opinion of your characters' prospects as a playing-card series should be taken as peripheral advice, rather than being allowed to become 'an influence'. Highly trained and talented 3D artists and animators shouldn't be wasting their time on such trivia.

Good CG television series, as always, will be based on the holy trinity of sound characters, great storylines and superb audiovisuals. If the show's good, the kids will watch and the toys will sell. Don't try to invent the merchandise before you've got the show. The words 'wagging', 'dog' and 'tail' spring to mind.

TV-inspired toys, books, games videos, mugs and so on.

Thomas the Tank Engine, Thunderbirds, Transformers, Power Rangers – they've all seen their day on the shop shelves as well as on screen. And we've seen the whole process lovingly reverse-engineered by Pixar

GARRICK WEBSTER is the editor of our sister magazine, *Computer Arts* www.computerarts.co.uk



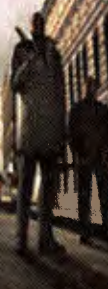
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finalRender

Cebas's powerful rendering plugin for 3ds max 4.2 proves itself a real workhorse

BY ALEX MORRIS

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MINIMUM SYSTEM

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MAIN FEATURES

- New faster Raytracer
- New Light types and Shadow types
- Particle lighting
- Global Illumination
- Reflective, Refractive and Volume Caustics
- Sub-surface scattering
- New material types and converter
- Texture baking
- HDRI
- Illustrator Line renderer built-in
- Free network rendering

FinalRender is a complete raytracing system which is fully integrated into the main *max* interface. Apart from the new global illumination (GI) abilities, it also incorporates Cebas's previous plugins *LumaObject*, *Lumaparticle* and *Bunch of Volumes*. At this price point, that would be a real bargain for its GI alone, but getting all this extra functionality is a real bonus. With such a toolset, you should be able to reproduce most lighting situations and material properties, resulting in a much higher degree of realism.

Because of the breadth of features on offer, *finalRender* can be found in many different places within the *max* default workspace. While it works with the *max* standard materials, you obtain much better control by using the new 'final render' material type. Once these have been assigned within the scene, the main process of iteratively improving render times and quality is controlled from the render globals panel, accessible from the quad menus or the material panel. Here you can adjust the sampling, anti-aliasing, and ray depths to hone the render solution. Once you're happy with the photon sampling at low resolution, you



can increase the quality by incrementally adjusting ray depth and random hemispherical rays until artifacting disappears. At this point the solution can be saved and, since it's scalar, be reused for the final high resolution image, thus saving huge amounts of time.

GI JOYS

The GI is quite simple to master once you've been through the excellent movie

file tutorials a few times. All the usual shortcuts are available to save rendering time, the most valuable being the new object lights, which are a descendant from *LumaObject*. These can simulate soft shadows and surface colour transmission to mimic true GI and also include a new cylinder light. You can use particles as light sources in the same way.

The renderer is optimised to use the new material type for raytracing, and

ARCHITECTURE AND GI

AS AN ARCHITECTURAL ILLUSTRATOR, photorealism is necessary for mounting convincingly with photography. In the past, the mainstay of radiosity with *max* was *Lightscape*. This uses a different GI method to *finalRender* and requires the scene to be modelled in a very exacting way. Workflow was always an issue and importing and exporting data caused problems. There have also been issues with *max/Viz* compatibility, which Discreet is in the process of addressing. For the past 12 months the best solution has been to use *mental ray* and part with lots of money. In some ways, this provides a better workflow with less exacting geometry at the cost of compatibility problems (even some of the default materials don't work with it). Frustratingly, the *mental ray* link to *max* remains incomplete, and no news has emerged yet about upgrades to *mental ray 3*, as seen in *XSI 2.0*.

Refreshingly, there are now quite a few alternatives on offer and *finalRender* is the best and most cost effective of the rivals to date. It offers most of the features found in *mental ray*, apart from



Displacement mapping, and more importantly you can access them all through the standard interface, and use all your old plugins with it.

finalRender works well with complex scenes, but obviously render times increase with scene size. As with all GI solutions, processor speed is everything and memory secondary. However, we had good results on a dual PIII 500MHz with 512MB RAM and even tried it out on a PII 450MHz under NT4. This testifies to how important workflow is. Most of the fine tuning of the render is done at low resolutions, where speed isn't as important.

SUB-SURFACE SCATTERING

THIS IS A RELATIVELY NEW METHOD of simulating light scattering within the volume of a translucent object. A good example of this is the way that skin glows red when back-lit strongly, depending on its thickness and the underlying structure (e.g. bones). This potentially offers another level of realism at the expense of a major processing hit. Human skin, jade-like materials, leaves and foliage, and milk-like liquids are just some examples of its possible uses.



02

works with several new shadow types. First and quickest is the new *fRShadowMap*, which gives greater control and extra features, such as coloured shadows, which are not available to the default renderer. The new *fRSoftshadows* provide the enhanced version of raytraced shadows for the new render engine. Both of these are considerably faster than their *max* counterparts, and work with all the other new components.

Bunch of Volumes was a brilliant volumetric effects package in its day, and all of its functionality is now available within the main package. All the main types of caustics are covered, with two types of volume caustics integrated: one as a render effect and the other as part of the main raytrace pipeline.

As part of the GI system, sub-surface scattering and translucency have also been included. This simulates light passing through a translucent body, giving a hint of its true scale and weight. The potential realism of this needs to be seen to be believed and Cebas is the first to introduce this to *max*. However, as a

volumetric GI effect, it does carry a render time warning, so beware!

The package also provides for image-based rendering using HDRI. This simulates the high light energy ranges found in nature by combining several images at different exposures into a single map. Once enabled within the scene, the GI renderer takes the bitmap values and filters them through the amount of exposure to produce convincing blooms and flares. Again, of course, this bumps up render times considerably.

ANIMATED EXAMPLES

Once you've finalised your overall lighting and material solution, you may need to animate the scene. In the past, GI artifacting has made this a bit of a nightmare, unless you like intentionally grainy results. Cebas has got round this by providing the facilities to bake the solution for both surfaces and lighting into textures using the *tBaker* utility. Once this has been done at the required resolutions, you can switch off all the scene lights and GI and whizz through your animations at incredible speed, although volumetric effects still need to be rendered.

As a bonus you also get an *Illustrator* material type which lets you render out hidden line renderings for technical illustration. Unlike the plugin *Illustrate* you are unable to save these out in vector format to *Flash* or *Illustrator* format.

Global Illumination has become the Holy Grail of the 3D Industry of late, with lots of rendering packages being released

offering various combinations of features. Cebas scores highly here for the completeness of its package. To date, other renderers have only offered a small subset of *finalRender's* features for use within *max*, and then at the expense of compatibility with other areas of the main program. Similarly, Cebas has really thought through the workflow and produced a package which can produce excellent results in a short period. At a price that's half that of comparable packages, this will become a standard plugin for anyone trying to achieve any degree of photorealism.

Only a few minor niggles come to mind in terms of the interface and these are mainly in the way that materials are handled. First, the materials do not always render as expected in the material editor, and there are some changes to the way raytraced parameters are handled, which at first are counter-intuitive. The only other major omission is the inability to do distributed renders of single high-res image files over a network, although Cebas says that this will be available soon.

finalRender represents huge value for money, and makes it possible to create images of astounding quality and realism without too steep a learning curve. The possibilities are endless and the plugin cries out for further exploration.



3Dworld Verdict



PROS

- Can use existing *max* scene materials and lighting
- Works with most other plugins
- Workflow is quick with a scalable GI solution

CONS

- Steep learning curve, offset by good documentation and tutorials
- Transparent objects don't allow photons through
- Lack of tutorials for some features – for example, sub-surface scattering

[01] This shows the early stages of experimentation with the scene. This uses an example from the *max* samples CD-ROM and started to adjust the textures and sampling. The insert shows the sampling rendered at a low resolution prior to the larger image being rendered. This saves a huge amount of time since the solution is scalar and can be saved and reused. Incidentally, the *max* default lighting is still on here.

[02] This shows the final render from the previous image with the lighting and materials finalised. Notice that the interior of the car is quite dark. To allow the glass to pass photons, you need to enable caustics in the Global Properties dialogue.



Wacom Intuos2 tablet

Great for digital fine art, but is Wacom's latest a useful addition to your 3D toolset? **BY STEVE JARRATT**

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MAIN FEATURES

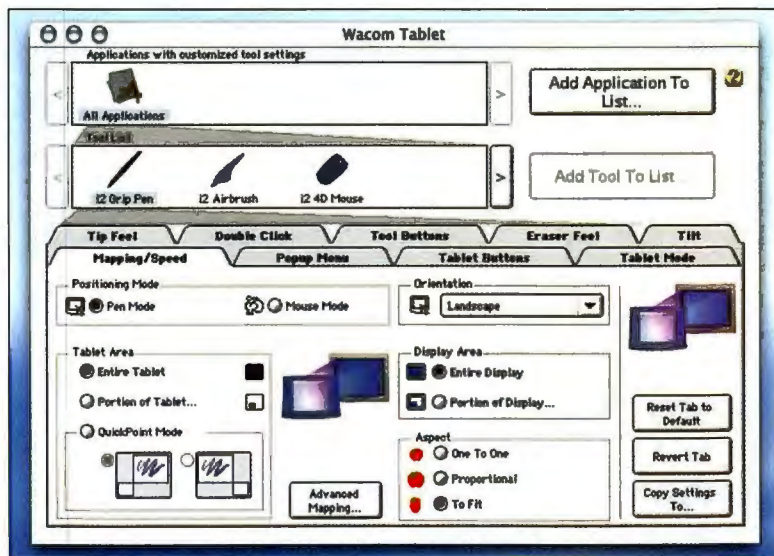
- New technology and 'Midnite' colour scheme
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- Automatically detects different tools
- Assignable Function keys
- Bundled with Corel Painter
- Classic and Wacom PenTools

The name Wacom has long been synonymous with graphics tablets (two million users, according to its website, can't be wrong), and this latest addition to its popular Intuos range, the Intuos2, looks set to continue that trend, having undergone a pleasing aesthetic overhaul and offering enhanced performance.

Over and above the earlier Intuos range, the biggest difference here is the semi-transparent purple colour scheme. Although the tablet's form factor is identical, the tools have been remodelled, too – the 4D mouse has had a minor makeover, while the sturdier pen sits much more comfortably in the hand. Cleverly, the rocker switch – which you can use to activate various menus and so on – is now optional. It's a simple matter of clipping it in and cutting the rubber grip to suit, although for most uses it's more of a hindrance than a help. The 4D mouse works perfectly as a wireless device (complete with scroll wheel), and also doubles up as a togglebox, enabling you to work with both hands, one drawing, one operating the flow of ink or size of nozzle.

In terms of the technology, Intuos2 runs at a higher frequency than its predecessors and uses 2x digital oversampling to improve accuracy and data transfer. In reality, the performance improvements are subtle at best, and dependent largely on your particular hardware and application palette:

previous Intuos tablets fared admirably under the same conditions. Rest



The Wacom tablet driver (which now works under Mac OSX) enables you to define the characteristics of each tool according to your applications. The ability to assign functions to the pen rocker switch, mouse buttons and the Function keys which line the far edge of the tablet is useful, too.

assured, though, the Intuos2 is a precise and robust graphics tablet.

Most 3D apps require constant access to the keyboard, so one potential drawback with the large Intuos2 (456mm x 361mm) is that it will eat up desktop real estate. Although it's tempting to think big is better, most 3D artists may be better opting for a smaller model (perhaps A5), so that tablet and keyboard can co-exist happily on your worksurface.

However, the biggest question remains the simplest: how much use will you get from it? With 3D work, this depends on your application support and the kind of design you specialise in. Chances are, you might not need the tablet all the time; working with a mouse and keyboard is often enough for many programs. But if you need to create

organic, flowing work – whether that's modelling with splines, sculpting a mesh, animating text, dirtying up a texture map or simply

sketching ideas for a client – a tablet suddenly comes into its own.

In this respect, the Intuos2 delivers handsomely, enabling you to adopt a much more organic drawing style, adding subtle details beyond the reach of even the most accomplished mouse-pusher. The tablet-and-pen system picks up every nuance of the artist's movements and produces extremely natural results. Simply adding detail to an image map is a far simpler – and more enjoyable – task with the Intuos2 at hand.



3Dworld Verdict



PROS

- Beautiful results with 2D imagery
- Useful for many different design tasks
- A natural way for traditional artists to work

CONS

- Not always ideal for 3D apps
- Still slightly expensive
- Requires specific program support

Avatar Lab

Mix 'n' match body bits and create your own *Atmosphere* avatar, courtesy of Curious **BY ROB CARNEY**

PRICE £68
\$99

SUPPLIER
Curious Labs

CONTACT
+001 831 462 8901

WEB
www.curiouslabs.com

MINIMUM SYSTEM

- Pentium
- Windows, Win98, WinME, Win2K, WinXP Pro, WinNT 4.0
- QuickTime 5.0
- 64MB RAM
- 100MB HD

MAIN FEATURES

- 5-step Avatar-creation for *Adobe Atmosphere*
- Export to *Poser*
- Upload directly to FTP
- Face-mapping tools
- Ability to edit preset textures
- Preset libraries of limbs, torsos and heads
- Basic animation tools (preset actions)

[01] Handily, you can alter any texture maps in any image editor – adding scope for customising your avatar beyond the preset body parts.

[02] *Avatar Lab* looks and feels very much like *Poser 4* – without the precise control. Avatars are built by selecting preset limbs and heads and then scaling them to the required size.

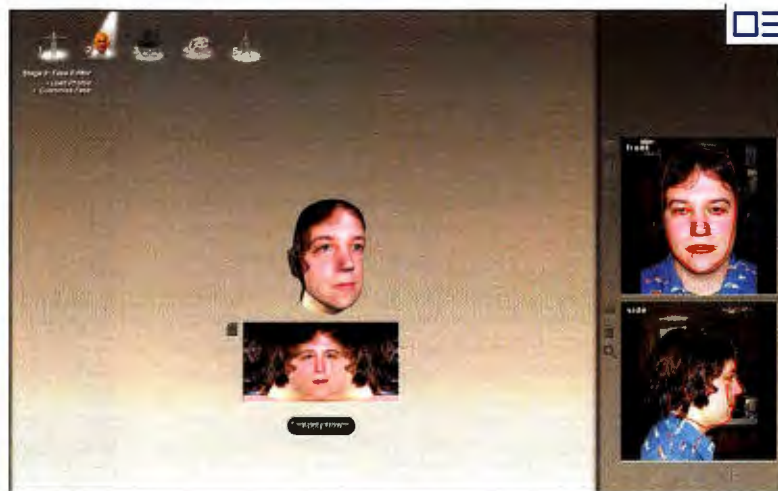
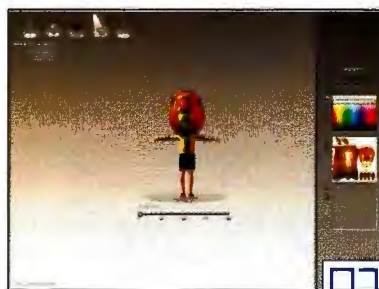
[03] The face-mapping technology employed in *Avatar Lab* enables you to map your own face onto your avatar – often with some rather frightening results.

When Adobe released *Atmosphere* – its tool for creating virtual 3D environments – we were a little shocked, to say the least. After all, apart from the now discontinued (and pretty basic) *Dimensions*, Adobe is regarded very much as a 2D-focused company. Despite this, and the fact the software is still in beta-testing stage, *Atmosphere* has gained a huge following among surfers looking for a touch better scenery than the doldrums of text-based chat applications.

Up until now, the appearance of your avatar in *Atmosphere* (the virtual form you take when in the 'chat room') has been limited to a rather poor selection provided by Adobe. Curious Labs, purveyors of the ubiquitous *Poser*, has set out to change this with its latest application, *Avatar Lab*.

Once it's up and running, you're presented with what looks to be a cut-down version of *Poser*. A generic (and a little beefed-up) woman stands arms spread in the centre of the silver workspace. Elements such as the head, torso, hands, legs and hair are added individually using an incredibly simplistic graphical interface. Curious Labs has even kindly numbered the interface elements, thus guiding you through the avatar creation process.

Creating an avatar is dead simple. Selecting the head of your main character prompts a list of heads to appear on the right-hand side of the interface (the same goes for body parts and so forth). These aren't limited to human heads either. If you wish, you can have a cat's head on a



chicken's body... with hooves. And you can modify textures at any time by simply double-clicking on the texture map and opening it in *Photoshop* or similar.

Curious Labs has also included the ability to map a texture of your own head onto your own avatar (rather like the amusing, but not exactly pro-orientated *3DMe Now!*). As you can imagine, endless amounts of fun can be had watching your own face glide across the screen attached to the body of a beast...

Once you've added a suitable walk and defined various actions from the presets (our favourite being the moonwalk – hilarious), you're ready to publish to a local drive or FTP site. You can also export the model, textures and all, to a *Poser* document.

Although it's possible to preview your avatar in the *Atmosphere* browser itself, when actually involved in a chat room,

THINK CAREFULLY ABOUT SPENDING CASH ON A DIGITAL VANITY PRODUCT...

you can't see yourself (unfortunately, there are no mirrors in virtual space). We also had problems getting *Atmosphere* to recognise our avatar (although this is no fault of *Avatar Lab* itself), and because you can't see yourself, it's difficult to know if your alter ego is working successfully.

It's a specialised product with a specialised use – after all, not everyone's going to bother with this – only the hardened 'chatter' we suspect. And at \$99, it's also a little expensive, so think carefully about spending your cash on what simply appears to be a digital vanity product.

3Dworld Verdict



PROS

- Easy avatar creation • Exports to *Poser*
- Great fun to use

CONS

- Limited use and export • Slightly gimmicky

PiXELS 3D 4.0

The veteran 3D Mac app gets a facelift. It's also been taking its vitamins and is now faster and stronger than ever. But can it compete with fellow athletes like *Maya*?

BY GEORGE CAIRNS

PRICE \$599
(£414)

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sales@pixels.net

WEB
www.pixels.net

MINIMUM SYSTEM

- Power Macintosh
- System 8.5.1 or higher
- QuickTime
- OpenGL
- 256MB RAM
- 40MB hard drive space

MAIN FEATURES

- RenderMan-compliant REYES renderer
- Second-generation interface
- Programmable shaders
- Particle system
- Stackable, non-destructive modifiers
- IK and FK

The first impression on opening the latest version of *PiXELS 3D* is that the interface has had a massive make-over. Version 3.0 was pleasing to the eye, but with version 4.0, *PiXELS* has become a real head-turner. The new Favourites Bar along the top behaves in much the same way as the Mac OS X Dock: simply move the cursor along it and various tool and command icons zoom towards you, begging to be clicked. You can even add favourite tools by pressing Command during use.

And thanks to the Layout Manager, every aspect of the user-interface is customisable. View all your UI elements (or widgets, as they're called) and delete, reposition or resize them to create whatever UI layout is required. The old Object Info box has also evolved – into the new Attribute Manager. This lists objects in the scene in a convenient hierarchical structure much like *Maya*'s outliner. And as with *Maya*'s Channel Box, you can use the Attribute Manager to edit the objects position, rotate and scale values. Little icons next to their name also enable you to template Objects or make them invisible.



One of *Maya*'s most impressive UI elements is the pop-up menu you can summon wherever your cursor happens to be. *PiXELS 3D* now boasts a similar Contextual Menu, summoned by pressing Ctrl and clicking anywhere on the screen. Basically, this is a handy shortcut to various commands, including how objects are displayed in the view pane (wire-frame, flat shaded, etc). You can also use it to

specify whether you want to select Vertices or Faces on objects in a scene.

Hot keys are also a new staple of the *PiXELS 3D* control diet. Commonly used tools and actions are now assigned to the Function keys (the Move, Scale, Rotate tools, for example). Just make sure you haven't assigned the same keys to another application, though, or you'll go for a wire-frame view and open your browser by mistake! These enhancements will effectively streamline your work flow and increase productivity.

Aside from improvements to the interface, modelling tools have undergone an equally impressive reconfiguration. The NURBS shapes are fully editable using the Attribute Manager or by pulling CVs around as you would in *Maya*. Meanwhile, a comprehensive selection of deformers and modifiers like Twist enables you to deform the selected object around the X, Y, or Z axis. You can even draw curves on your NURBS objects. A library of 2D spline curves, from the obligatory freehand option to arcs, squares and even an editable cog shaped spline, are also available. These can be used as starting points to extrude, loft and lathe all sorts of interesting models.

PIXELS V MAYA

IN MY DAY JOB, I use *Maya* on an SGI, but I get chucked out at 5pm. At home, I can work into the small hours and on weekends using *PiXELS 3D* on my iMac. Do I feel I'm slumming it using *PiXELS 3D*? Not at all. I've found it to be a surprisingly powerful application given that its price-tag is a fraction of *Maya*'s. Both applications work well together, as this illustration for the *Rifts Collectable Card Game* demonstrates. The

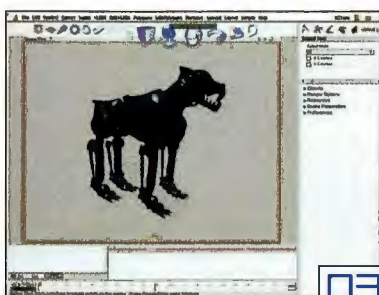


simple polygon corridor was bashed out in *Maya* in a couple of hours. The more complex NURBS Bottweiler was built over a couple of weeks in *PiXELS 3D*. I rendered each model in its own application and composited them together in *Photoshop*. The client didn't care what application I used, because he was only interested in the finished result.

[□□] Play with the camera's f-stop and focal length to add depth-of-field effects.



02



03

Polygon Modelling is equally well supported with a library of primitive shapes waiting to be modified by various Boolean operations.

ANIMATION SPECTACULAR

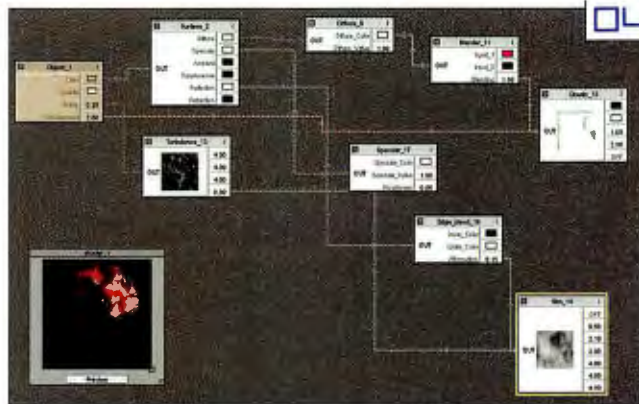
Animation has undergone key revisions, too. Improved inverse kinematics (IK) help you create animatable articulated figures using bones, so you can move the objects much more realistically. You can even create IK objects where a bone is associated with one or multiple objects, and set up multiple IK systems in each scene. A powerful hierarchical time-line also enables you to create characters with realistic motion, thanks to editable Bézier function curves for all keyframable parameters.

And then there are the deformation tools like Control Point, Curve, Surface and Lattice, which enable you to

modify an object's shape as time passes. For facial animation in seconds – very handy – there's also the multi-target morph system MorphMaker.

Further similarities to *Maya* emerge once you explore *PIXELS 3D*'s ShaderMaker, a swift function for creating procedural textures. It works very much like the former's Multi-lister with its Shading Groups, so you can plug the output from one node into the input of another to create procedural shaders without writing a single line of code. A basic understanding of programming is all that's required if you want to convert *RenderMan* shaders to ShaderMaker nodes in mere minutes.

They may be small, but particle generation is the latest Big Thing in CG – and here too *PIXELS 3D* delivers, courtesy of its powerful Particle System. Select Particles>New Particle System to create a basic set-up and one emitter. Now visit the Attribute editor and play with the dynamics affecting the particles (gravity, wind and so forth) by adjusting easy-to-use sliders. As with *Maya*, you can even apply a Vortex to your animation and whip up an impressive virtual maelstrom. All the usual attributes – lifespan and opacity – can be easily edited, while setting up particle collisions is simplicity itself.



04

But *PIXELS 3D* delivers a stunning *coup de grace* with its rendering, which relies on the *Tempest* engine, a *RenderMan*-compliant *REYES* renderer (*REYES* is the rendering system developed at Lucasfilm and refined by Pixar). For incredible depth-of-field effects, simply modify the f-stop to change the lens aperture size and alter the focal length, or use 3D motion blur to add dynamism to your animation. Process-wise, the aptly named Conductor organises rendering through a queue system. Its built-in image cache holds the last 10 frames rendered, which is handy for locating those 'hard to spot' subtle changes you make while fine-tuning scenes. This enables you to quickly identify and remedy problematic frames with ease.

With such facilities on offer, *PIXELS 3D* begs comparison with *Maya*; indeed, we've made many comparisons in this review. So can it compete in the 3D arena? *3D World* certainly reckons so. *Maya* may be an established pack leader, but *PIXELS* is more than capable of giving it a run for its money, and at a fraction of the price too.

[02] *PIXELS 3D 4.0* enables you to work on complex NURBS patches fully lit and shaded.

[03] The Favourites Bar behaves like the Dock in OSX. As you scroll along it, the icons pop up. Besides being pretty, it's functional too, because you can customise it with your own tool requirements.

[04] The ShaderMaker lets you plug'n'play with nodes to create complex procedural textures.



PROS

- Customisable user-interface • Comparatively cheap • Helpful community of online users

CONS

- Mac only

4x4: Geometry and Chaos

Geometry and chaos – surely two mutually exclusive concepts? Not necessarily...

BY ED RICKETTS



WRITERS Brian Taylor, Dave Smith, Nathan Flood, Tom Muller

PRICE Price: \$50 (including CD)

PUBLISHED BY
Friends of ED

SIZE
274 pages

WEB
www.friendsofed.com

ISBN
1-903450-46-2



Tutorial-based books for just about every software package under the sun are ten-a-penny these days, but there's still a distinct lack of 3D-related books written simply to inspire. Friends of ED set out to rectify this with the 4x4 Project, four books with the same basic format but different content, which aim to both inform and inspire.

Each book focuses on two areas of software – in this case, *Photoshop* and 3D. Four established and experimental artists in those fields are then given a particular theme and asked to create anything they like based on it. Afterwards, the artists

(ranging from *3ds max* to *Strata 3D*) and the way they use it, the bulk of their sections is dedicated to initial thought processes once given the brief, first attempts – and subsequent experimentations.

It's unusual to have such an in-depth look at the workings of any artist's brain, even if sometimes Taylor and company can't explain any further than: 'It feels and looks right' (Tom Muller). Despite the book's slight pretentiousness, the artists themselves are refreshingly down-to-earth, discussing inspiration from the type of music they like, to smoking (cigarettes, that is) and visual design systems for electric power grids.

Perhaps the least successful area of *4x4: Geometry and Chaos* is the 'remix' stage, mainly because the artists are quite reluctant to change each others' work drastically. This is understandable, particularly given the wide range of styles on display. However, they do at least have a damn good stab at it and the results, if not breathtaking, certainly should inspire.

The 4x4 concept is a refreshing and in some ways risky idea, but in this case at

least it certainly seems to have paid off. The four artists' approaches are radically different – Brian Smith, for instance, cranks out around ten pieces, and is perhaps the least abstract of the four, while Dave Smith experiments largely on the same basic, very abstract theme.

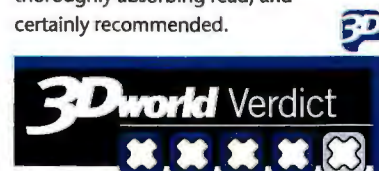
If you're a 3D artist, at the very least what you'll get from this book is that perhaps your own working practices aren't quite so bizarre and seemingly unstructured as you thought. And at best, you'll pick up some new techniques and tangents, particularly as all the relevant pictures and models are included on the accompanying CD.

Even if you're just a dabbler, it's a thoroughly absorbing read, and certainly recommended.

EVEN IF YOU'RE JUST A DABBLER, THIS IS A THOROUGHLY ABSORBING READ, AND CERTAINLY RECOMMENDED

take each others' pieces and 'remix' them in their own style, with the whole process mapped out in the book.

The theme of this 3D tome is Geometry and Chaos, which as you can imagine is rather a broad remit. The four artists involved are Brian Taylor, creator of Rustboy (see issue 14); Dave Smith, a Canadian designer who founded Math studio; Nathan Flood, an American who's worked largely on the Web; and Belgian artist Tom Muller. Although each artist touches on their software of choice



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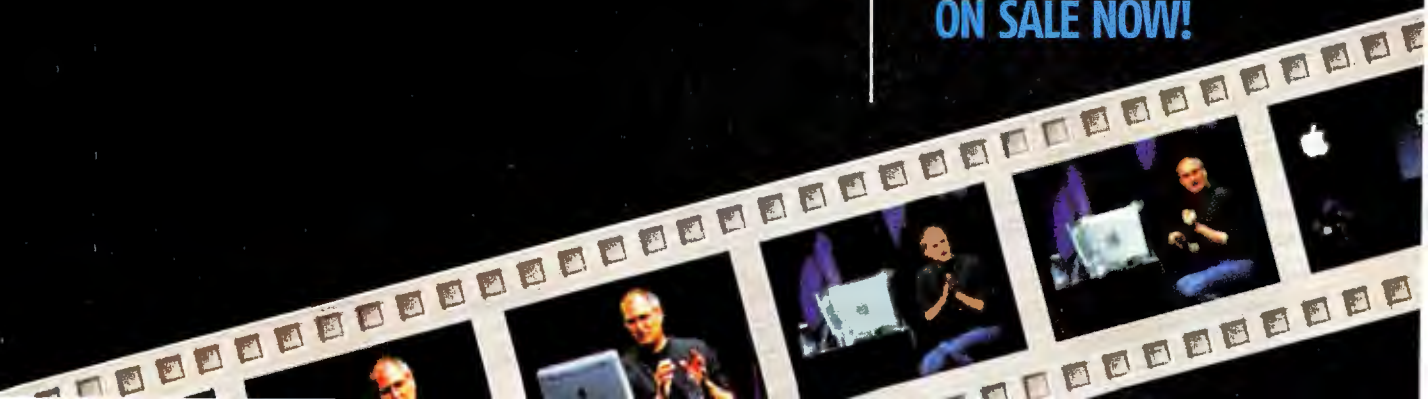
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get a job!

Reckon you're good enough to get a job in the industry? You'd better make sure your job application skills are up to scratch then...

Like many other technology-related industries, the 3D market has felt the squeeze in the past year. With major cutbacks and some surprisingly large companies going under, it might not seem to be the ideal time to look for a job in the industry.

However, don't be fooled into thinking this is a market in recession. As 3D becomes more and more mainstream, and permeates ever more aspects of everyday life, the demand for talented 3D artists and animators is only going to grow. The key word here is 'talented'. Or, at least, you must be enthusiastic and ready to learn; companies still need to take on young artists who they can trust and nurture in the knowledge that they will deliver the results in the long term.

So now, more than ever, it pays to be informed about just exactly what any company is looking for, and how you can maximise your chances of securing a job (even if it's a part-time one). Talent is one thing, but knowing the industry and being able to convince a potential employer that you're just the wunderkid they're looking for is another.

We spoke to Lisa Cross, Recruitment Manager at recruitment and training agency Corps Business, for her advice to aspiring candidates in the industry.



Lisa Cross is Recruitment Manager at Corps Business. For more information on the company's range of services, visit the website at: www.corpsbusiness.co.uk

considerable number of redundancies made over the past few months, coupled with some high profile companies going under. There are still openings for talented young designers, however the state of the market is putting increasing pressure on them. They will have to work harder in this competitive environment to find good opportunities.

3D WORLD: For work submissions, what size and format do you recommend?

LISA CROSS: The easiest way for recruitment agencies or potential employers to view portfolios is as PDFs, which can be emailed. It's a good idea to keep it to one or two pages and ensure the file size is kept to a minimum.

3D WORLD: What are the key qualifications the industry looks for? Or is it more a case of having an impressive portfolio and showreel?

LISA CROSS: A degree in graphic design/media arts etc is the standard that is generally looked for. A good portfolio and experience are invaluable.

3D WORLD: What's the most common failing you see in applicants, and what's the easiest way they can correct it?

LISA CROSS: Presenting their portfolio is a unique opportunity to convey their enthusiasm for their work and also show the background work that went with each piece – the thought processes, sketches and other interesting points to the work. I feel that sometimes designers don't make the most of presenting their portfolio to potential employers. The main factors that work wonders are the applicant's passion and enthusiasm for their work.

3D WORLD: Can you explain what Corps Business does?

LISA CROSS: Corps Business is what we like to think of as the 'all-round solution'. We offer a consulting service to provide the right solution for print and new media issues. The three sides of our business are Recruitment, Training and our New Media Studio. If a client comes to us with a project, we can provide a tailored solution to suit their needs. We can train a member of their staff at our Adobe and Macromedia authorised training centre. We can supply a fully qualified and experienced person to work on the project through our recruitment department, whether it be on a permanent or temporary contract. Or, if it's a new media issue, we can take the whole project in-house and produce it ourselves.

3D WORLD: How tight is the market for jobs at the moment? Are there still openings for enthusiastic young designers?

LISA CROSS: The market is very tight at present. There have been a



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Every month, *Cre@teOnline* showcases the finest sites on the Web and the people behind them. As well as acting as a forum for professionals to exchange ideas, we also explore how sites can be improved and the effect they have on their end-users. If you want to stay ahead of the game, start here.

THIS MONTH: THE BROWSER ISSUE

Ask any Web designer for a list of their frustrations, and browser compatibility issues are sure to figure. Creating sites that work efficiently across multiple browsers is time-consuming and expensive – and with a host of new browsers on televisions, mobile devices and games consoles, the problem's only going to get worse. This month, we take an authoritative look at the subject, focusing on the current state of browser standards, and its likely development in the future.

PLUS:

Usability tyrant? Not so! Jakob Nielsen reveals his soft centre, and his search for fantastic *Flash* design

Phillips Design's August De Los Reyes on the lessons we can learn from the ancient Greeks and renaissance art

The BBC's Katherine Everett on iDTV and broadband

Plus, five world-renowned Web wizards discuss the boundaries between art and design in our Big Issue debate

What makes a good music news site? Three experts tell all

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ELSA Gloria DCC	ELSA	+44 (0)800 563 445	£800	3.5	18
ELSA Gloria III	ELSA	+44 (0)800 563 445	£799	4.5	16
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[HardWare] Iomega Peerless	Iomega	+41 22 879 7000	£117 (10GB USB bundle), £308.33 (20GB)	3.0	17
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Silicon Graphics 230	SGI	+44 (0)870 423 2243	£3,750	4.0	03
Voodoo 5500	3dfx	+44 (0)1753 502 800	\$299.99	2.5	04
Wacom PL500 Interactive Display	Wacom	+44 (0)20 8358 5858	\$3,999	2.0	11
WildCat II 5000	3Dlabs	www.3dlabs.com	£1,028	3.5	20
Wildcat II 5110	3Dlabs	+44 (0)1784 470 555	\$2,530	4.0	13
ZBrush	Pixologic	+1 888 748 5967	\$585	3.5	05
zBrush 1.23	Pixologic	+1 888 748 5967	£200	4.0	16
3DBOX S2	Reality Computing	+44 (0)1483 202051	£4,694	3.5	21

software

PRODUCT	SUPPLIER	CONTACT	PRICE	VERDICT	ISSUE
3ds max R4	Discreet	+44 (0)20 7851 8000	£2,695	4.5	10
Adobe Photoshop 6	Adobe Direct	+44 (0)131 458 6842	\$609	4.5	05
AIST Movie3D	HiSoft	+44 (0)1525 718181	£129	3.5	18
Amapi 3D 6	Computers Unlimited	+44 (0)20 8358 9235	\$399	3.5	14
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Aura 2	NewTek	+33 557 262 262	£510	4.5	10
Axel 1.0	Mindavenue	+1 514 271 4774	£1,167	4.5	18
Bodypaint 3D	HiSoft	+44 (0)1525 718181	£395	4.5	08
Bojoup 1.2	2d3 Ltd	+44 (0)1865 811061	\$10,000	4.5	17
Bryce 5	Computers Unlimited	+44 (0)20 8358 5857	£195	4.0	16
CacheForce ModelBank	CacheForce	+49 201 273 623	\$149 / \$449	3.0	19
Character Studio 3	Discreet	+44 (0)20 7851 8000	£995	4.5	08
CineLook	Polar Graphics	+44 (0)208 868 2476	£490	4.5	04
Cinema 4D Dynamics	Maxon	+44 (0)1525 718181	£329	4.5	18
Cinema 4D NET	HiSoft	+44 (0)1525 718 181	£86.38 / £629 / £1,497	4.0	06
Cinema 4D X.7	HiSoft	+44 (0)1525 718 181	£1,188	4.5	14
Cinema 4D XL6	HiSoft	+44 (0)1525 718 181	£1,187 / \$2,195	4.5	01
Combustion	st@c media	+44 (0)1483 549375	£2,295 / \$3,495	4.0	04
Cult3D	Cycore	+44 (0)20 8883 9330	\$500 p.a.	3.5	12
D Joiner	D Vision Works	+44 (0)1235 437 109	£300	3.5	20
D Sculptor	D Vision Works	+44 (0)1234 437 109	£500	4.0	11
Deep Paint 3D + Texture Weapons	Keoti	+44 (0)20 7482 4858	£995 ex VAT	4.0	05
DPX+	Zen Computer Services	+44 (0)905 94 4280	\$695	4.5	10
Digital Nature Tools for Maya 3.0	Graphics Domain Limited	+44 (0)20 7610 8686	£1,265 / £1,925	4.5	13
Director 8.5 Shockwave Studio	Computers Unlimited	+44 (0)20 8358 5857	£949	4.5	17
Dosch Design Texture CDs	HiSoft	+44 (0)1525 718181	£27.50	4.0	01
dvGarage Surface Toolkit Vol 1	dvGarage	+1 415 626 2400	£155	3.5	14
eFX Pyro 1.0	Electric Fx	+1 604 731 1820	£139	3.0	20
ElectricImage Universe	Gomark	+44 (0) 20 7610 8686	£1,388	4.0	15
ETShadPro R4/E	Expression Tools	info@expressiontools.com	\$1,399	3.0	16
Face Works	Puppet Works	+1 416 947 1881	\$4,995	4.0	6
FILMBOX 3.0	Kaydara	+1 514 842 8446	£3,382	4.5	19
FILMBOX Studio 2.7	Kaydara	+1 514 842 3355	\$5,000 - \$30,000	4.5	11

software continued...

PRODUCT	SUPPLIER	CONTACT	PRICE	VERDICT	ISSUE
Freeform	SensAble Technologies	+1 (781) 937 8315	\$21,450	4.5	2
Hash Animation Master 8.5	Hash, Inc.	+1 360 750 0042	\$299	4.0	12
Houdini 4.0	Techimage	+44 (0)1367 253 868	£10,950	4.5	2
IBM Spaceball 4000	IBM	+44 (0)800 169 1460	£360	3.5	15
Illusion: the magic of pixels	Impulse, Inc.	+1 800 328 0184	\$299	4.0	12
Ispace	guildsoft	+44 (0)752 895 100	\$99	4.0	3
Kelseus Cloth	Kelseus Limited	+44 (0)1223 471 224	£399	4.0	14
LightWave 6	PAR Services	+44 (0)20 7439 3270	\$2,495	4.5	1
LightWave 3D 7	Gomark	+44 (0)20 7610 8686	£1,982	4.0	19
LightWave 6.5	Gomark	+44 (0)20 7731 7930	£1,599	4.5	7
Lunar Cell	Flaming Pear	+1612 253 8400	£14	3.5	9
Max Havok Pro	Havok	+1 650 322 2332	\$795	4.5	7
MaxPac 6000	Maxvision Corporation	+ (256) 772 3058	£4,825	4.0	13
Maya 3.0	Alias Wavefront	+44 (0)1494 441 273	\$16,000 / \$7,500 / \$2,995	4.5	1
Maya 3.0 for Linux	Alias Wavefront	+1 416 362 9181	£1,850 / £6,000 / £12,950	3.5	17
Maya 3.5 Mac	Alias Wavefront	+44 (0)1494 441 273	£6,360	4.0	20
Maya 4	Alias Wavefront	+44 (0)1494 441 273	£6,360 / £13,560 / £2,580	4.0	15
Medea Video Raid RT	Medea Corp	+44 (0)20 818 597 7645	£1,560 / \$2,495	4.0	1
Mental Ray Studio	Discreet	+44 (0)207 851 8000	£1,945 / £3,545	4.0	5
Merlin 3D	Digital Immersion Software	+1 705 522 7991	\$595	3.5	14
Messiah 1.5.5	PMG	+1 (323) 662 2480	\$695	4.0	8
MojoWorld Generator	Pandromeda	www.pandromeda.com	\$249	4.0	19
NatFX	Bionatics	+33 (0)149 691 220	\$2,400 (natFX Base); \$3,500 (natFX Ultimate)	4.0	21
NuGraf 4	Okino	+1 905 672 9328	\$395-\$495 (numerous bundles available)	4.0	21
Particle Storm 3.0 Napalm	Dynamic Realities	+1 702 990 2277	£280	4.0	16
PolyTrans	DCP	+49 402 540850	\$395	3.5	2
Poser Millennium Models	Zygote	+1 801 375 7220	\$59.95	3.5	6
Poser Pro Pack	Computers Unlimited	+1 831 462 8907	\$199	4.0	9
Pure	Advanced Rendering Technology	+44 (0)1223 563 854	£2,499	5.0	20
Pyrocluster	HiSoft	+44 (0)1525 718 181	£204	4.5	12
Quest3D	Act3D	+31 71 514 77 99	£174	3.5	20
Real Viz JPF	Graphic Domain Limited	+44 149 451 5500	\$5000 / £3,500 / \$800 / \$12,000	4.5	4
RealFlow 1.3	NextLimit	+44 (0)1444 232 000	\$595	4.0	2
RealSoft 3D 4	Realsoft Graphics	+358 3 471 8390	£432 / £216	4.0	7
RealWave	NextLimit	+44 (0)1444 232 000	\$245 (+\$50 for RealFlow)	4.0	2
Reelmotion 1.0.4	Motional Realms	+1 602 230 1300	\$795	4.5	3
Rhinoceros 2	Aztec CAD Ltd	+44 (0)20 7987 6453	£544	4.0	17
Sasquatch	Worley Laboratories	+1 650 322 7532	\$499	4.5	4
SceneGenie 1.2	ID8Media	+1 415 495 3930	£660	4.5	2
SCS2	Cryonetworks	+44 (0)1625 539 494	£266	3.5	11
Shave and a Haircut	Safe Harbor	+1 800 480 5777	\$285	4.5	4
Smells like Almonds 1.2	HiSoft	+44 (0)1525 718 181	£62.50	3.5	1
Smells Like Almonds 2	HiSoft	+44 (0)1525 718 181	£119 / \$150	5.0	6
Softimage XSI	Softimage	+44 (0)1753 655 999	(\$11,995 / \$7,995)	4.5	1
Softimage XSI 1.5	Softimage	+44 (0)753655999	£7,995 / £11,995	4.5	9
Softimage XSI 2.0	Tyrell	+44 (0)20 7343 5500	\$12,300 / \$8,200	4.5	19
solidThinking 4.1	Gomark	+44 (0)20 7731 7930	£1,737	3.5	9
Sony Vaio PCG F809K	Sony	+44 (0)990 424 424	£2,809	2.5	8
Stitch	digimation	+1 504 468 7898	\$695	4.5	6
Stitcher 3 Mac	REALVIZ	+33 4 92 38 84 60	£568	5.0	17
Thinking Particles	Cebas	+49 6221 76 00 38	\$1,295	4.5	17
Thunder	Cubicspace Studios	www.plugin3d.com	£300	4.5	21
trueSpace 5	Guildsoft	+44 (0)1752 211 313	£655	4.0	11
Video Toaster	Graphic Domain Limited	+44 (0)494 515 500	£1,995	3.5	7
Viewpoint Model Library	Viewpoint Digital Ltd	+44 (0)1753 650104	\$5000 / \$10,000	4.5	19
VR4MAX	Tree C Technology	+31 (0)30 656 9600	\$2,200	4.5	21
Wacom Intuos	Wacom.com	+44 (0)20 341 5521	A3 £609, A4 £365	4.0	6
World Builder	Digital Element	+1 510 451 8020	£399 / \$999	4.0	20
World Construction Set 5	3DNature	+1 303 659 4028	\$995	4.0	13

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plug-ins

PRODUCT	SUPPLIER	CONTACT	PRICE	VERDICT	ISSUE
aEdge shaders	TripleD Tools	+1 505 332 3332	\$159	4.0	21
3d Studio Max Bunch of Volumes	Trinity 3D	+1800 548 1578	\$195	4.0	5
3d Studio Max Illustrate 4.1	Digimation	+1 800 854 4496	£295 / \$395	4.0	3
3d Studio Max MatterWaves	Trinity 3D	+1800 548 1578	\$295	4.0	5
3d Studio Max Phoenix	Digimation	+1 800 854 4496	£299 / \$395	4.0	3
3d Studio Max Pro-optic suite 1.31 vx	Trinity 3D	+1800 548 1578	£450 / \$595	4.5	3
3d Studio Max Quickdirt	Digimation	+1 800 854 4496	£199 / \$245	4.0	3
3d Studio Max QuickTime VR	Trinity 3D	+1800 548 1578	\$150	4.0	5
3d Studio Max StairMax	Trinity 3D	+1800 548 1578	\$150	3.5	5
LightWave 3D LightNet 1.5	Komkom Doom	+32 92 342 215	FREE	4.0	3
LightWave 3D Project Messiah v1.54	Project: Messiah	+01 310 342 0077	£463 / \$695	4.0	3
LightWave 3D Relativity	Prem Subrahmanyam Graphic Design	+1 850 575 6051	£133 / \$200	4.0	3
LightWave 3D The James K Polk Collection	Worley Labs	+1 650 322 7532	£133 / \$199	4.5	3
LightWave Shadow Designer 1.1	Evasion	support@evasion-studio.com	£70	4.0	16
LightWave X-Def 1.0	Evasion	support@evasion-studio.com	£120	4.5	16
Maya Autonomous Character Plug-in V1.0	BioGraphic Technologies, Inc.	+1 514 844 5255	\$999	5.0	16
Maya Digital Naturetools 3.0	Tyrell Corporation	+44 (0)20 73 435 510	pluspack (£1,510 / \$2,995) original (£1,325 / \$1,995)	4.0	3
Maya Genesis 3.1	JMG Graphics	+33 (0)14 969 1220	£650/\$990 (database of 50 plants and a year's maintenance. Additional Databases £500/\$750)	4.0	3
Maya Modelling Poly Kit (MetaMesh Extreme)	Phoenix Tools	+39 026 707 5747	Full \$1,000, 12-month \$275	4.5	3
Maya RealFur	Phoenix Tools	+39 026 707 5747	Full \$1,600, 12-month \$400	3.5	3
Maya Titan	Poojyum	jagan@poojyum	\$99	4.0	16
MrsBebel	Konkeptoine	www.konkeptoine.com	\$150	4.0	21
Pixels3D Anvil SteamRoller	TripleD Tools	+1 505 332 3332	\$129	4.5	3
Pixels3D Big Selma	Pixels3D	+1 619 220 4902	FREE	3.5	3
Pixels3D Particles	Pixels3D	+1 619 220 4902	\$99	4.5	3
Pixels3D xSpline	TripleD Tools	+1 505 332 3332	\$99	4.5	3
PowerParticles Pro 2.1	TripleD Tools	+1 505 332 3332	\$299	5.0	21
Volumetric Conception	Konkeptoine	www.konkeptoine.com	\$125	4.0	21

books and videos

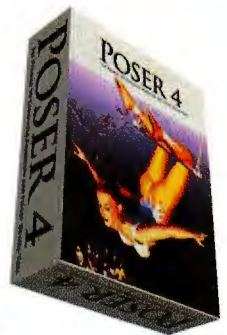
PRODUCT	SUPPLIER	CONTACT	PRICE	VERDICT	ISSUE
3D Studio Max 3 Magic	New Riders	+1 800 545 5914	£34.99	3.0	4
Inside 3D Studio Max 3	New Riders	+1 800 545 5914	\$46.99	4.5	4
3ds max 4 for Windows: visual quickstart guide	PeachPit Press	+1 (800) 283 9444	£16.99	3.0	19
Animation: Master: Siggraph99 Pro Training Tapes	Hash, Inc.	+1 360 750 0042	\$85	3.5	12
An Introduction to Implicit Surfaces	Morgan Kaufman	+1 (415) 392 2665	£47	3.5	14
An Introduction to NURBS	Morgan Kaufman	+1 (415) 392 2665	£35	3.5	14
Digital Domain: The Leading Edge of Digital Effects	Aurum Press Ltd	+44 (0)20 7637 3225	£35	4.0	21
Digital Lighting and rendering	New Riders	+1 800 428 5331	£38.99	3.0	21
FormZ Desktop Companion	AGU Datakonsult AB	+46 19 323 800	£44	4.0	8
Inside 3ds max 4	New Riders	+ (371) 581 3500	£38.99	5.0	19
Inside LightWave 6	New Riders	+1 800 545 5914	£42.99	5.0	5
Inside trueSpace 4	New Riders	+1 800 545 5914	£41.50	4.0	6
LightWave 6.5 magic	New Riders	+1 800 545 5914	£35	4.0	10
LightWave 6 Training Videos	Class on Demand	+44 (0)1847 843 9939	£26.65	2.5	7
Softimage XSI: Mastering Materials video	Grubbs of Imagination Studios	+44 (0)1877 871 0966	\$149 - \$170	4.0	10
The Animator's Survival Kit	Faber and Faber	www.faber.co.uk	£20	5.0	20
The Art and Science of Digital Compositing	Academic Press	+44 020 7424 4200	£37	4.5	10
The Art of 3D Computer Animation and Imaging	John Wiley and Sons	+44 (0) 1243 843 294	£39.95	4.0	6
The Art of Maya	Alias Wavefront	+44 (0)1494 441 273	£60	4.5	8

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culture vulture

The prospect of an industry where conceptual disability is rampant and cultural ignorance universal looms over us all

BY MARK BRIERLEY

THE CONTEXT OF
THOUSANDS OF YEARS
OF CREATIVITY IS
BEING ABANDONED

Just the other day I was idly leafing through EH Gombrich's *The Story of Art*, gazing at the illustrations and marvelling at the sublime beauty and abundant imagery contained therein, when (upon being transported into a state of near epiphany by a particularly fetching nude) I fell into a reverie, reflecting on the following paradox.

We as computer animators are among the first artists in history to be truly painting with light, no longer having to dig our materials out of the planet's surface or even having to learn to draw. It is a medium renowned for its capacity to hold a

weaponry? Kick-boxing warriors? Robots wearing flares? That's not my idea of epiphany.

It's my contention that, as animation is no longer the predominantly design- and craft-based industry it used to be, we are losing the historical perspective that is so essential to the informed application of the tools of our trade. The context of thousands of years of creativity is being abandoned. And to compound this cultural severance, computer-animation courses – whatever the prospectuses say – are not offering the raw exposure to Art for its own sake that widens students' perceptual and conceptual horizons.

Sad to say, but it's not beyond the bounds of possibility that soon – perhaps even within just one generation – newly graduated animators' interest in, let alone experience of, any art-form apart from film (and even that only going back as far as *Star Wars*) could well be thin to non-existent.

All animators, be they students just starting out (in fact, especially students just starting out) or industry-hardened know-it-all cynical old troupers like me, can benefit both spiritually and pragmatically from the observation and study of the methods that artists use in other disciplines. From that gloriously rich and varied vein can be mined a wealth of knowledge. Indeed, an afternoon's browsing in a library will provide unparalleled opportunities for the examination of, for instance, techniques of composition, lighting and modelling (painting, photography, and sculpture sections respectively), seated at the feet of the masters, in any number of styles, and from any century you care to mention.

A caveat: I don't maintain for a minute that all art, music, literature and the like necessarily merits our attention (listen: I've sat through a performance of *Salad Days*, for heaven's sake, and that was ghastly). But at its best, 'Art' – in the widest sense – can be a rarefied and heady mix of edification and inspiration, embracing everything from Aboriginal wall-paintings to Iris Murdoch novels, Hokusai prints to Metallica albums. Ensure that the students of today inhale the invigorating oxygen of such triumphs of the human spirit as these, and perhaps there'll be fewer goggle-eyed aliens and rampaging CGI dinosaurs tomorrow.

mirror to our imagination, that enables us to create numinous and innovative images without the acquisition of even basic manual skills. Yet it seems to me that an alarmingly high proportion of CG subject-matter is derivative, hackneyed and monotonous. Improbably-breasted cuties toting ludicrously OTT

MARK BRIERLEY is a freelance animator based in Bristol in the UK, with numerous CG-related projects under his belt, including work for Aardman.



PERSPECTIVE

THIRD

Starship Troopers

Legendary creature creator Phil Tippett discusses his involvement with Paul Verhoeven's fabulously ultra-violent sci-fi epic **BY MARK RAMSHAW**

Classic movie monsters are few and far between. The sci-fi and horror classics of the '50s spawned a handful, HR Giger's creature in *Alien* certainly impressed, and the Predator is one of the few man-in-suit designs that bears up to scrutiny. But even in the age of the computer-generated monster, few have the power to really shock an audience. Of this modern breed, the lethal bugs of *Starship Troopers* stand head and shoulders above the rest. They kill without mercy, they look and fight like the most primitive hunters imaginable, and they work in packs numbering thousands. They are man's fear of arachnids made real and magnified a thousandfold. Their creators at Tippett Studio are understandably proud.

"They had to be the quintessential enemy and they had to be as horrible as possible," agrees studio founder and Creative Supervisor Phil Tippett. "That way you don't have to worry about political correctness when the humans are killing so many of them!"

The idea was also to give the action in *Starship Troopers* a retro feel, using World War 2 and other period combat for reference. "You've got the visceral horror of the Alamo type scene, where thousands and thousands of bugs are advancing. And each bug is also the equivalent of a piece of war machinery. The flying hopper bugs are the Stukas, the bugs that fire up the plasma are the Howitzers, and the tanker bugs are the tanks."

"IT BECAME VERY CLEAR AT THE TIME THAT CG CHARACTERS WERE HERE TO STAY..."

DINOMANIA

Consequently, Steven Spielberg was well aware of Phil's passion for dinosaurs by the time the *Jurassic Park* project had been greenlit, and soon enough dinomaniac Phil was on board as the

project's 'dinosaur guru'. And even though the original idea of using giant robots and stop-motion for much of the film was dropped once it became clear CG dinosaurs would stand up to scrutiny, Phil and his studio remained on board, developing the DID motion input device to provide more convincing dino movements than could be achieved by the CG animators.

"It became very clear at the time that CG characters were here to stay, and that it was something the studios were going to put a lot of money into. It's always great PR to be able to promote something as using the latest and greatest technology."

[□] "The tanker bugs are able to fire out a plasma sort of goo, like flamethrower jelly," says Phil. "The process begins with a sort of ignition on the bug's head, with a spark igniting the pilot light (visible in this image), which then sets fire to the spray as it comes out. We were aiming for a performance rather than just have the stuff firing out."

[□] Phil handled creature animation using a mixture of hand-animation and data obtained via the company's DID motion input device. The DID was first developed to give stop-motion animators control over the CG dinos in *Jurassic Park*.

ARMY OF DARKNESS

"WHEN WE STARTED WE DIDN'T KNOW what we were doing," confesses Phil Tippett. "With well over 1,000 bugs in some scenes, frames were taking 50 hours to render, and if we hadn't figured out how to lighten the load we'd still be animating and rendering them to this day." To simplify the rendering, a sprite system was developed for wide shots. With bugs pre-rendered out at various angles, several background layers could be quickly built up to flesh out the numbers. The animation process was then simplified using a number of techniques. These included a procedural system to have the bugs move using the path of least resistance.

"They'd flow like water to fill a volume, following the geological erosion of the landscape," says Phil. "But of course building a performance for a crowd is different from working on an individual character. It takes a lot of work, especially with wide shots."

"Also, with six or seven walk cycles spread over 1,000 bugs, you end up with whole bunches of them walking in sync. So we'd have



A relatively small army of warrior bugs find themselves under attack.

to go through and kill that. And the animators would also select key zones where specific action needs to take place, and then go in and do the key animations for the bugs in those areas."

1997

FACT FILE

BY Tippett Studio
Other effects by: Sony Imageworks, Industrial Light & Magic, Boss Film Studios, Visual Concept Entertainment, Banned From The Ranch, Compound Eye, Pop Film

EMPLOYEES 125

CREDITS (As both Phil Tippett and Tippett Studio): *Star Wars* (1977), *The Empire Strikes Back* (1979), *Dragonslayer* (1982), *Return of the Jedi* (1983), *Willow* (1987-88), *Ghostbusters 2* (1989), *Jurassic Park* (1992-93), *Dragonheart* (1994-95), *Starship Troopers* (1996-97), *Armageddon* (1998), *The Haunting* (1999), *Bicentennial Man* (1999), *The Hollow Man* (2000), *Mission to Mars* (2000), *Cats and Dogs* (2001)

AWARDS *Return of the Jedi* (1984), *Dinosaur!*, *Jurassic Park* (1993)

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03



[03] Compositing is pretty much flawless in *Starship Troopers*. Tippett Studio was able to use specially designed maquettes over a foot long out on the set to obtain lighting and colour reference for its CG department.



04

[04] "The textures were Craig Hayes' milieu; he's the king of surfaces," says Phil proudly. "His secret is the way he finishes the designs off with surfaces that are evocative of hard shells, or undulating fleshy areas."

identifiable faces, and mouths with which to eat the outnumbered troopers. Thankfully, the wishes of Paul Verhoeven and Tippett Studio prevailed, the final scenes demonstrating just how elegantly evil the CG creatures are, as they literally tear countless troopers to shreds in scenes of war that eclipse those of any other sci-fi movie to date.

"I was talking with Paul about the movie, saying there's no way a studio would put up \$120 million for another movie like this. Hollywood is more about generic franchises. There's so much homogenisation, whereas my preference is more for odd kinds of projects, the kind of thing you get when working with someone like Paul or Guillermo del Toro, who we're working with on *Blade 2*. He's another terrific director."

Tippett Studio's next creature creations can be seen in the del Toro-directed *Blade 2*, due for cinema release in the Spring.

CG work on a couple of relatively low budget projects, *Tremors 2* and *Three Wishes* provided an ideal transitional stage for the studio, and by late 1994 (four years after initial discussions about the project) a test shot showing a bug attacking a soldier had also been created for Paul Verhoeven, Phil and his team having created the ED-209 for Verhoeven's *Robocop* movie. Paul then went off to make *Showgirls*, before returning to the *Starship Troopers* project.

"The designs, all by Craig Hayes, were actually pretty much in place before *Showgirls*. There are six main ones, with the warrior, the hopper bug, the tanker bug, plasma bug, the brain bug and then the brain's attendants."

At the time, fans of the book criticised the movie's interpretation of the battle sequences. "We had a couple of meetings with Paul and scriptwriter Ned Neumeier about whether or not we'd remain true to the book," remembers Phil. "We could either include the powersuits and other military paraphernalia, or focus on the bugs. Paul opted to make sure the enemy were as well developed as possible and so we put all our eggs into that basket."

"We looked at a great deal of reference material initially, watching documentaries about insect life, but really Craig was intending more to give them a really alien feel, to make them as 'efficient' as possible. It's all too easy to make models that are heavy to operate. These very light creatures can be very lively."

At the time, the movie studio didn't actually realise just how effective the designs were, complaining that the monsters lacked



01



02

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PC only
demo

Trial version of the virtual people creator from Curious Labs

With the release of *Adobe Atmosphere* many frequenters of virtual chat forums believed that they would soon be able to have their own unique presence whilst chatting. This, however, has proved more difficult than anticipated, the creation of avatars requiring some fairly in-depth programming. Curious Labs, the developers of *Poser*, have seen a way around this. *Avatar Lab* is their solution to this problem, enabling users to quickly and easily create and customise their own virtual presence with a selection of pre-set body parts, plus the ability to import your own features and map them onto the head of your creation. You'll soon be able to make your presence felt wherever you go to chat. This demo version does not enable you to save or publish your creations – to do this you need to register the software and pay your money.

CONTACT: www.curiouslabs.com



Dual
format
demo

Poser Pro Pack

Add professional functionality
to your *Poser* creations

This is an add-on package to *Poser* which enables artists to be more free and creative. Most noticeably, there is the inclusion of the Setup tab as well as the normal Pose screen. When working in Setup mode, you have access to a multiple camera view. Among the added rendering options are motion blur and material animation. However, where the Pro Pack excels is in its export capabilities. You can now export for the Internet in either *Flash* format or as Viewpoint Experience Technology format. You can also port entire *Poser* scenes into *LightWave* and *3ds max*, enabling you to further develop the scene and rendering options. Other notable additions are the ability to apply animation sets to other characters and the support of Python scripts.

CONTACT: www.curiouslabs.com



WHAT IF YOU NEED FURTHER ASSISTANCE WITH THE CD?

Before contacting us, please be sure to read the entry relating to the software you're trying to use. If you have a problem getting a program to run, contact our technical-support department using one of the following methods.

- e-mail 3dworld.support@futurenet.co.uk
- web www.futurenet.co.uk/support
- fax +44 (0)1225 732279

- telephone +44 (0)1225 442244 (ext 2101)

At www.futurenet.co.uk/support you will find a list of frequently asked questions and solutions to common running problems reported for our coverdisc. This website is kept up-to-date and has links for downloading any material that might solve a potential problem.

Please e-mail our support team at the dedicated 3D World e-mail address quoted before trying to telephone. The lines can be very busy at times. We regret that due to

the complexity of the software on our CD we are unable to offer full support beyond installation queries.

WHAT IF I HAVE A FAULTY CD?

This is highly unusual, but if it's confirmed by our technical-support team please return your faulty disc to the following address and a free replacement will be with you within 28 days: Bluecrest International Ltd, Unit 6, Avenue 1, Station Lane Industrial Estate, Witney, OX8 6XZ, England.

cd interactive

Multiple
formats

Renderosity Sampler

Merchants supply an example of their works for sale in the Renderosity Marketplace

At the Renderosity Marketplace you can find all manner of products for sale. Merchants can put up their work and customers can browse the varied categories. While the majority of content seems to be especially geared toward *Poser* and *Bryce*, there is

also much to be found that will be useful to a far wider spectrum of software users. Categories include: 3D Models, *Bryce*, *Carrara/RDS*, CD Compilation, Community Fund, Merchandise, Shippable Products, Software and Textures: Generic

as well as seven separate *Poser* sections. This sampler includes offerings from 52 merchants and covers a wide selection of the range available. **CONTACT:** www.renderosity.com

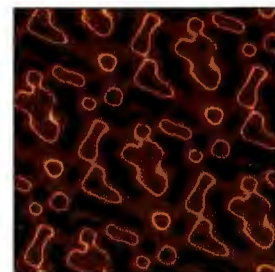
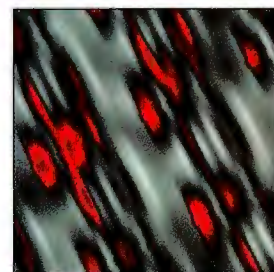
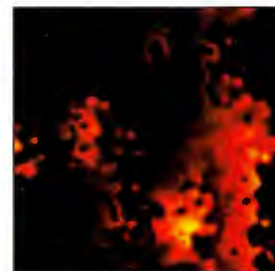
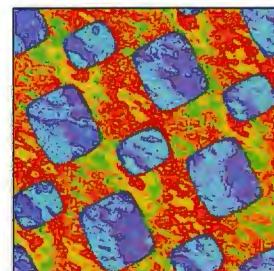
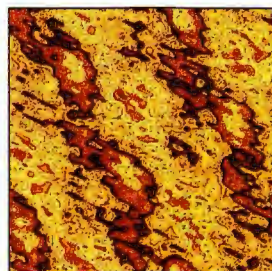
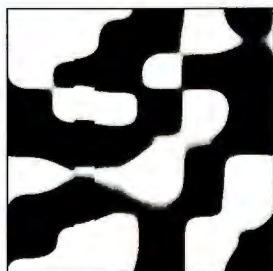
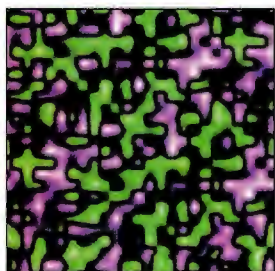
jpeg
format

Ground Zero Software

Over 500 fully tilable textures
from Ground Zero Software

This extensive collection of over 500 textures is yours to do with as you will, great for backgrounds as well as for texturing your favourite 3D creations. These textures are rendered at 256x256 pixels and are supplied to

you in JPEG format by the world-famous Ground Zero Software. In the Resources\Ground Zero folder on the disc you will find 539 textures split into 11 folders of 49 textures each.



EXHIBITIONIST

This issue's up-and-coming 3D artist in our Exhibitionist section is James Abell. **CONTACT:** jamesabell_2000@yahoo.co.uk

EXHIBITION

A further collection of work from artists around the globe. Send your pics and you may appear next issue. **CONTACT:** 3dw.exhibition@futurenet.co.uk

TUTORIALS

As usual we bring you the full-sized screenshots and supporting files for all of our tutorials.

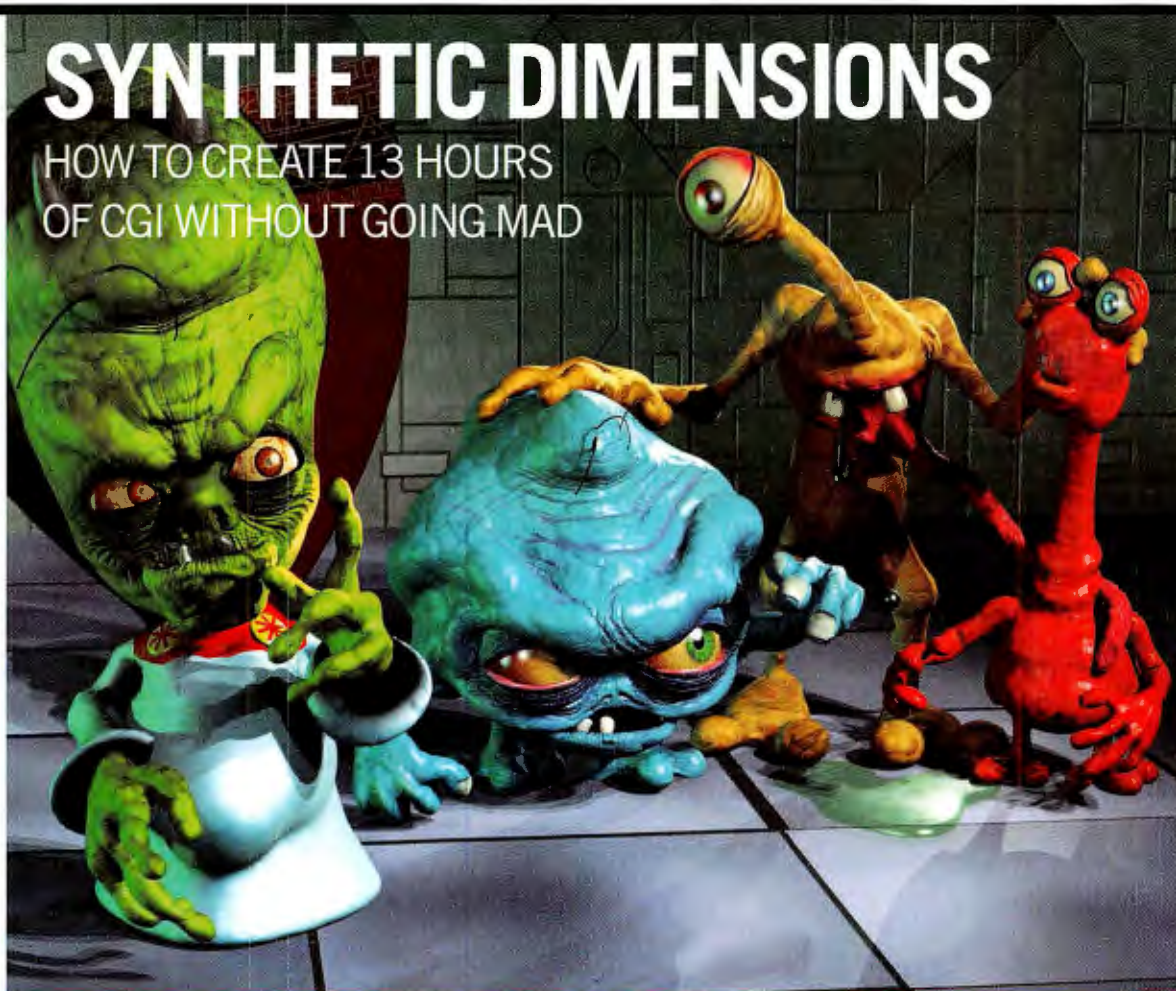
MOVIES

3D World brings you the interactive portfolio of the profiled Bas Visual Concepts. See page 70 to find out more.

ON SALE IN THE UK: 21 February 2002

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next issue

SYNTHETIC DIMENSIONS

HOW TO CREATE 13 HOURS
OF CGI WITHOUT GOING MAD

- RENDERING REALISTIC METAL • DIRECTING, PART THREE
- *ELECTRIC IMAGE UNIVERSE 4* • BLACK HAWK DOWN (REALLY)

All contents subject to change

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MAXON 3D software is available from all good resellers, including:
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The MAXON 3D range includes: CINEMA 4D XL R7 (£1395), CINEMA 4D ART R6 (£549), CINEMA 4D GO R5 (£169), BODYPAINT 3D (£479), CINEMA 4D ARTsuite (ART R6 + BODYPAINT 3D, £729), CINEMA 4D Production Suite (XL R7 + BODYPAINT 3D + C4D NET UCL, £1995), Dosch Design Products (from £39.95), Vue d'Esprit 4 (£169) and many supporting products such as books, training CDs etc. All prices are SRP and include VAT.

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CINEMA 4D XL R7 was
voted 'Best 3D
Graphics Software of
2001' at the MacUser
Awards ceremony on
22 November 2001.

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